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THE UNIVERSITY OF ALBERTA

AN ANALYSIS OF CROSS-COUNTRY SKIER CHARACTERISTICS, PREFERENCES, AND SATISFACTIONS IN KANANASKIS PROVINCIAL PARK

BY

R. E. FINZEL

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE

IN

WILDLAND RECREATION

DEPARTMENT OF FOREST SCIENCE

EDMONTON, ALBERTA
SPRING 1986

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "An Analysis of Cross-Country Skier Characteristics, Preferences, and Satisfactions in Kananaskis Provincial Park," submitted by Roy E. Finzel in partial fulfilment of the requirements for the degree of Master of Science in Wildland Recreation.

Supervisor

Date: April 22, 1986

ABSTRACT

Interview responses from a random sample of 184 cross-country skiers at Kananaskis Provincial Park, Alberta, Canada, provided data used to examine: (1) demographic traits, (2) their preferences for terrain/trail design, facilities/ services, and management practices, (3) social carrying capacity, (4) skier satisfaction, and (5) the relationship between perceptions/ influences and degree of density on crowding perceptions.

With respect to demographic traits, it was found that the Kananaskis Park skier is likely to be someone who is middle aged (35 years), an urban dweller, has a high level of education and white collar occupation. The skier also tends to ski in groups of 2-4 people, often with friends and family. The proportion of male to female skiers was 60% to 40%.

Several preferences for terrain/trail design, facilities/services and management practices were identified. Terrain attributes which skiers value most highly include scenic views, ample topographical variety, and natural settings. Trails favoured by skiers are of moderate slope, wide, groomed, and pass through different vegetative types. Poor trail conditions and evidence of man-made features detract from skier satisfaction. Skiers place a higher priority on trail amenities (shelters, benches, dry pit toilets) than on convenience facilities such as restaurants, snackbars and stores. Skiers indicated a need for improving information sources which provided reports on ski trail and snow conditions. Skiers were also less supportive towards the policy of allowing pets in the ski areas. Approximately 61% of the sample surveyed would be willing to pay a user fee for groomed versus non-groomed trails.

Relative to social-psychological outcomes and satisfactions, the opportunities for naturalism, physical activity/achievement, and stress release/solitude are most important to cross-country skiers. The behavior of other skiers (e.g., lack of trail etiquette and littering) appears to be the most influential factor in reducing skier satisfaction.

In considering perceptions of crowding, several conclusions may be made. First, skiers expected the encounter levels and reported no reduction in enjoyment of their skiing experience as a result. Second, no significant relationship was found between skiers' reported contacts and satisfactions. Finally, several plausible factors contributing to the perceptions of crowding were discussed, and include behavior, rate of contacts/resultant interaction, location of encounters, type of skier, and group size.

ABSTRACT (cont'd)

Findings suggest that the relationsihp between psychological, behavioral or social phenomenon, and the degree of density must be assessed if one is to understand an individual's perception of crowding. Management practices such as manipulative controls are likely to receive greater acceptance by skiers than regulatory controls.

Management implications and recommendations for both cross-country skiing in general and for management at Kananaskis Provincial Park are also identified.

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CHAPTER I

INTRODUCTION

Background to the Study

Originally, nordic skiing was used as a means to travel, hunt and fight over snow-covered terrain. Evidence of man first using skis to hunt was discovered in a Norwegian cave north of the Arctic Circle. Carvings dated 2,000 B.C., show a stick figure riding skis in pursuit of elk (Gillette and Dostal 1983). Historic records indicate that skiing evolved from a utilitarian purpose to being used for fun in Norway by 1779. Although the Scandinavian people have enjoyed nordic skiing for hundreds of years, the first record of cross-country skiing in Western Canada is 1899, when it was introduced by Swiss guides skiing to Glacier House in the Rogers Pass, British Columbia. Recreational skiing did not develop until the 1920's and 1930's. It resulted in the planning and implementation of several ski lodges in remote areas at Mount Assiniboine, Sunshine and Skoki. With the onslaught of the war years, cross-country skiing, for some unexplained reason, was virtually terminated in the Rockies, and it was not until the 1960's, as fitness became a lifestyle, that skiing again became popular. Considering the interest in cross-country skiing during the 1930's and through into the mid-sixties, it is, however, only until recently that one may consider it a recreational activity which has a mass participation (Parks Canada 1975).

In the last few years cross-country skiing has become an extremely popular winter recreation pursuit. This recreational activity has experienced perhaps the most phenominal increase in popularity. In Canada, nordic ski participation increased from 1.3 million to 4.6 million during 1976-79/80 (Ski Industry Bulletin 1981). On a local scale, in Banff National Park alone, registered ski tours increased from 14,500 to 27,069 between 1973 and 1974 (Parks Canada 1975). Alberta's cross-country ski population has increased from 50,000 to 324,675 skiers (Alberta Recreation and Parks 1980). Over a four year period (1976-80) the skiing population in Alberta has increased more than six fold. At present, the number of skiers continues to increase, but at a slower rate (Parks Canada 1984). Cross-country skiing has become one of the most popular winter activities and Olympic sports. It is one of Alberta's best organized sports, with numerous ski clubs throughout the province. Cross-country skiing is no longer a low participation activity.

The popularity trend also parallels a growing specialization in equipment and skier classes. In the 1850's, skis could range in length anywhere from 8 to 25 feet long. Ski poles were single six-foot wood staves. Technology in the skiing industry has changed considerably since then. The present trend is towards a greater performance of specialized equipment in satisfying the needs of skier classes. There are five main classes of skiers. Differences are based on terrain and route characteristics as well as individual preferences and equipment used (Parks Canada 1983; Gillette and Dostal 1983). They are as follows:

1) Nordic or recreational skiers; usually ski on groomed and track-set trails in accessible areas such as Valley Bottoms or Benchlands.

2) Ski tourer; the "Back Packer" skier usually skis in back country areas using summer hiking routes. They may be exposed to the hazards characteristic of mountain travel in winter.

3) Ski mountaineer; skis on high alpine terrain and may involve glacier travel.

4) Telemarking is a technique used in turning. Skiers adept at this technique may either be found in the back country or downhill ski resorts.

5) Racer or competitive skier; usually on natural terrain, one-third downhill, one-third flat or rolling, and one-third uphill. Events are timed and courses range in length of 5, 10, 15, 20, 30, or 50 kilometers.

The increased popularity in cross-country skiing will most certainly put pressure on existing areas such as Kananaskis Provincial Park[1].

Statement of the Problem

Assuming the number of cross-country skiers continues to increase, present and future nordic ski areas are faced with the dilemma of meeting a rather specific demand within a finite resource base. Research suggests that recreation managers are faced with the responsibility of providing skiers with high quality recreation experiences, to protect them from serious harm, and to prevent unacceptable damage to the resource (Driver and Brown 1978). Specific institutional directives of Alberta Recreation and Parks lend support to the previously mentioned responsibilities. Provincial Parks Policy (1973) has addressed two basic demands:

1) "Preservation and conservation of resources, sites, features and attributes which are unique, rare or representative of the jurisdiction, and which collectively constitute a nonrenewable heritage resource, valuable for the social, scientific, education and aesthetic benefits it may yield."
2) "Provision of a comprehensive range of recreational opportunities on public land, the utilization of which permits the user population to engage in stimulating, fulfilling and restorative leisure pursuits in a natural resource oriented, out-of-door environment."

---

[1] As of January 1, 1986 the Park has been renamed Peter Lougheed Provincial Park.

If satisfaction is related to optimizing one's experience preferences, then managers are obliged to understand the components which comprise the positive amenities and preferences for each of the available experiences within their area (Becker 1978). The psychological, physical and social environments of an individual interact simultaneously to result in the user experiencing a quality recreational experience (Driver and Cooksey 1979). An understanding of who the users are, and what their needs and preferences are constitute criteria which would provide planners and managers with the basis of characterizing desired experiences in the development of experiential management.

To facilitate the development of management programs concerning cross-country skiers, an adequate data base of user statistics is necessary. Studies have been completed to this end, but data deficiencies exist both in terms of specific assessments and the development of skier profiles (Deeg 1983). The lack of a data base, involving cross-country skiers, and the necessity to understand them more completely prompted the study design. The present study focuses on skiers using cross-country sites at Kananaskis Provincial Park.

Purpose of Study and Research Questions

The purpose of this study is to provide statistically reliable information on skier profiles which might be used in planning and managing cross-country ski areas for a particular administrative unit, such as Kananaskis Provincial Park, or have applications to future developments. The methodology applied in this study, as well as the results, are seen to offer application to cross-country skier studies elsewhere.

The research questions addressed in this study are as follows:

1) Who are the cross-country skiers who currently visit Kananaskis Provincial Park? What characteristics and demographic traits describe them?

2) Why do people cross-country ski? What social-psychological experiences do skiers expect and desire to experience?

3) What are the preferences of cross-country skiers for environmental characteristics and management practices?

4) What role does reported and hypothetical encounter levels play in determining skiers' perceptions of crowding?

5) What factors may influence the measure of crowding?

6) Would cross-country skiers be supportive of visitor use level control measures?

7) Which skier characteristics may be used to predict differences in preferences for environmental characteristics and facilities and services?

8) Is there a linear relationship between reported contacts and user satisfaction?

Objectives

The list of research questions has been developed with several objectives in mind. The objectives of this study are as follows:

1) To investigate the relationship of skier profiles and sociodemographic variables to preferences.

2) To determine the variables which influence a skier's perception of crowding.

3) To determine the effects of social density on a skier's experiential quality.

4) To determine the kinds of satisfactions and benefits that, for skiers, define a high quality recreational experience.

5) To investigate the skiers' preferences for selected management practices, and determine the kinds of environmental characteristics skiers prefer.

6) To interpret the results and develop recommendations and implications for planning and management in nordic ski areas.

7) To develop a methodology which may enable researchers and managers to develop expanded inputs into social-psychological dimensions as an extended consideration in recreation resource management.

Significance of the Study

Understanding who the nordic skier is and determine what their preferences and satisfactions are is a prerequisite for the comprehensive planning and management of cross-country ski areas. Adequate information on the complex profile of a skier's values, needs, and preferences is often not available and considerable research is still needed to understand nordic skiing more completely (Haas et al. 1980; Deeg 1983). Insights gained from the behavioral and social sciences as well as resource-based disciplines (forestry, geography), contribute to an understanding of the user. It is the user's perception of, and relationship with, the environment which form the basis of a satisfying recreational experience (Lucas 1964).

Gardner (1977), refers to a social carrying capacity as a nebulous, and for cross-country skiing, seldom researched topic. An understanding of the user's perception of crowding or those factors which constitute a positive recreational experience would provide management with the basis of characterizing desired experiences.

This study will provide information on skiers which might be adopted by planners and managers in future nordic ski developments.

Definitions

Some of the terms in this report may be used interchangeably to express the same concept. To avoid any ambiguities, these terms and others relevant to this study are clarified and defined in this section.

Experience is a term that describes the kinds of satisfactions, benefits, or psychological outcomes an individual seeks from cross-country skiing. Depending on the context that it is used in, it also refers to the actual skiing skills of a skier.

Item is a response given by a skier to a question.

Park Proper is the same as facility zone which is an area developed for intensive recreation facilities, centralized visitor service functions and park operational infrastructure (Alberta Recreation and Parks 1979).

Psychological Outcome, Experience Expectation, Benefits are terms which may be used interchangeably to express what a skier expects in relation to a quality recreation experience.

Recreation is the volitive and pleasurable use of leisure time. A personal choice to engage in a self-rewarding activity during nonobligated time (Driver and Tocher 1970).

Trail Etiquette are suggestions as to what a person should do when out cross-country skiing. These suggestions serve as a guide to reduce conflicts between skiers and for safety.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter presents a review of the available literature relevant to variables under consideration for this study. The gamut of related studies on cross-country skiing varies depending on the facet of interest. Few studies dealing specifically with cross-country skiing have been published. Consequently, research dealing with similarly dispersed activities will be reviewed to illustrate concepts which are most likely analogous to cross-country skiers and which have not been dealt with to any degree in skiing studies.

The literature discussed in this chapter is grouped into the following primary categories:

1) User Characteristics
2) Preferences for Environmental Characteristics and Management Practices
3) Social-Psychological Carrying Capacity and Crowding

User Characteristics

All recreational activities, whether active or passive, have distinctive user profiles defined by the social, economic, and demographic characteristics of their participants (Coppock and Duffield 1975). This is generally consistent with cross-country skiing, where there is a similarity in studies compiling information on skiers. Several studies were reviewed, and comparisons of user characteristics are made where possible. An inherent difficulty in formulating comparisons, manifests itself when, for example, categories such as age or education are described by different parameters.

Table 1 presents a summary of selected skier characteristics which were obtained from various studies. Major trends regarding information gathered on age, sex, skiing ability, group size, group type and residence are quite similar. This supports the general consistency between studies on cross-country skiers. Inconsistencies may be attributed to changing trends over time, specific study site peculiarities, and surveys which do not use standardized questions and categories.

In summary, results from surveys of various studies, (Table 1; Newby and Lilley 1980; Hass et al. 1980; Taylor and Spencer 1980), indicate that cross-country skiers are well educated; live in urban and suburban areas; most commonly have professional occupations although a wide range of occupations are represented; slightly over half are male, having skied less than five years; ski most often with friends or family, are over a median age of 30 years, have a mean age of 30, day users, and most frequently are beginner to intermediate skiers. The skier profile varies from study to study, but similar patterns are exhibited. Intra- activity differences that exist can be sufficiently defined, planned for, and managed to improve the quality of experience for all skier types.

TABLE 1

COMPARISON OF SELECTED USER CHARACTERISTICS OF CROSS-COUNTRY FROM VARIOUS RELATED STUDIES*

				UNITED STATES	
CHARACTERISTIC	KANANASKIS PROVINCIAL PARK 1981	PARKS CANADA 1975	MARSHAL 1980	ROSENTHAL 1977	RAUHAUSER 1979
Mean age	35	30	32		28
Age Category		20-39; 54.7%	20-34; 52.8%	21-35; 70.3%	21-35; 74.2%
Sex					
Male (%)	58.3		67	59	60.4
Female (%)	40.5		33	41	39.6
Skiing Ability					
Beginner (%)	25.3	33.0	51.7	38.7	32
Intermediate (%)	50.7	44.4	41.5	50.9	50
Advanced (%)	20.0	17.4	6.8	10.4	18.0
Average Group Size	3.59	3.6	2.7		3.8
Education Level				92.1% College or Post Graduate	94.9% College or Post Graduate
Ski Group Type (%)	Alone 6.0 Friends 15.5 Family 23.8 Family and Friends 16.7 Organized 4.8	Family 24	Alone 11.4 Friends 37.4 Family 33.8 Family and Friends 14.3 Organized 3.2		Alone 5.0 Friends 54.3 Family 17.5 Family and Friends 15.6 Organized 7.1
Residence-Urban Center (%)	91.7	87	91	78.2	86.9
Years Skied			2.2	3.1	3.2

*Sources (Alberta Recreation and Parks 1981, Parks Canada 1975, Marshal 1980, Rosenthal 1977, Rauhauser 1979)

Preferences for Environmental Characteristics and Management Practices

Information on preferences allows planners to formulate design and management strategies which are most likely to receive acceptance from recreation participants. If managers are to be able to provide recreationists with satisfying recreation experiences, and understand the experiences that users favour, they require an evaluation of user preferences towards the recreational setting (Brown et al. 1978; Driver 1979). This includes preference information on environmental (terrain, trail design), and managerial characteristics.

Managers are often compelled to provide a wide range of recreational resources, facilities and settings to satisfy user preferences (Merriam and Knopp 1976; Stankey 1977). Research suggests, however, that manager's perception of users' preferences may not coincide with the expressed preferences of users (Hendee and Harris 1970; Hancock 1973). Researchers have surveyed the environmental and management preferences most commonly expressed by users in a particular recreational pursuit.

The implementation of use level control measures is a means of protecting both the ecosystem and the quality of experience sought by users (Bultena et al. 1981). Direct or regulatory, and indirect or manipulative, are two main types of actions for redistributing use (Hendee et al. 1978).

In several studies it was found that the most effective measures to control use levels were nonauthoritarian, indirect controls. These include redistribution of users through information (Lucas 1981), zoning (Stankey 1973; McEwen and Tocher 1976), and permits (Plager and Womble 1981).

Users visiting wilderness areas have mixed opinions about control measures. If these measures are to protect the resource base, and the quality of the recreational experience, measures seem to be well accepted by most visitors (Fazio and Gilbert 1974; Lucas 1980; Stankey and Baden 1977).

Studies by Stankey (1973) and Peterson (1974) suggest that users place a high value on the natural environment, accept facilities already provided, and oppose the addition of new structures. They do, however, support the development of facilities if their convenience or comfort while recreating is improved upon.

A few surveys have examined the user preferences for trail design and terrain, in an attempt to provide a more substantive basis to guidelines for developing cross-country ski trails. Skiers, having exposure to other options in the way of ski systems are making their preferences for nordic skiing known.

Marshall (1980) found preference for ski trails was given to trails having the following attributes: a variety of both vegetation and terrain, ascending and descending portions, tricky sections, isolation from roads and railway tracks, and one-way loops 10 kilometers in length. In addition, the provision of shelters along the longer trails, and at trail heads of shorter trails, is seen as important by skiers. Parks Canada (1982) reported similar findings.

An important component of the trail is open areas for viewing. Skiers in the Colorado Rockies expressed that views of natural areas and trails through natural areas were the two most highly valued features (Rosenthal et al. 1980).

A statewide survey of skiers in Minnesota identified several preferences for a wide range of attributes of the cross-country setting (Ballman 1980). Responses indicated that amenities which provide information such as trail signs and maps are viewed as most desirable. Warming huts and rest stops were also viewed positively. In contrast, seeing powerlines and similar man-made structures had a negative affect on skiers.

Social-Psychological Carrying Capacity and Crowding

Defining the carrying capacity concept is one of the major areas of interest to both recreation managers and researchers. This issue is an example of the difficulties associated with poor problem definition. Commonly, carrying capacity is defined as the amount of use (units or periods) possible without unacceptable deterioration of the physical environment and reduction of the quality of an activity. Recreational carrying capacity has been defined as follows:

> That level of development and use beyond which measurable decreases in average satisfaction occur as a direct result of gross numbers of recreationists (La Page 1963).
>
> The recreational carrying capacity is the character of use that can be supported over a specified time by an area developed at a certain level without causing excessive damage to either the physical environment or the experience of the user (Lime and Stankey 1971).

If carrying capacity is defined solely in terms of use level, management solutions could be limited to the control of use numbers. The issue, however, is much more complex than this. A number of studies have been conducted on recreational carrying capacity. This review will serve to elicit the changing perspectives and relevant variables of carrying capacity research.

The underlying principle of early studies on recreation carrying capacity was the maintenance of user satisfaction. The main components of these models were use levels and satisfaction. These studies relied on evaluations of hypothetical use levels rather than actual observed conditions (Absher and Lee 1981). As such, a clear negative relationship between use levels and satisfaction was identified.

The early work by Lucas (1964), for example, found canoeists of the Boundary Waters Canoe Area objecting more to use levels than motor boaters and motor canoeists. Stankey (1973) reports that high levels of use are inconsistent with high levels of satisfaction. In an early monograph on carrying capacity, Wagar (1964) notes a similar relationship between use levels and recreation quality. These early models of carrying capacity served as an appropriate place to begin analysis of crowding in recreational settings.

Recent studies by a number of recreation researchers (Absher and Lee 1981; Bultena et al. 1981; Ditton et al. 1983; Manning and Ciali 1980; Shelby 1980; West 1982) have examined on-site rather than hypothetical use situations and found weak to modest correlations between satisfaction and area use levels. This suggests the need to consider additional variables.

Crowding perceptions and physical density are the underlying concepts of social-psychological crowding in recent research. Schmidt and Keating (1979) and Stokols (1972) have made important distinctions between density and crowding. Density is typically defined as the actual numbers of people in a particular area. It is a physical index, subject to no psychological or experiential evaluation and interpretation. In contrast, crowding is defined as, "A cognitive evaluation that is predicated on the individual's negative affective reaction to the immediate environment," (Schmidt and Keating 1979). In other words, crowding is a personal, psychological, negative evaluation of a density where the individual's satisfaction or enjoyment is somehow reduced.

Schryer and Roggenbuck (1978) explain satisfaction using discrepancy theory as follows:

> "(1) Satisfaction is determined by the differences between the perceived outcomes an individual receives and the outcome he wants or thinks he should receive, and (2) overall satisfaction in any situation is influenced by the sum of the discrepancies that exist for each facet of the situation."

Satisfaction, as a measure of reactions developed in response to crowding, is commonly used in recreation research. Likert or summative models are frequently used in measuring satisfaction (Beard and Ragheb 1980).

Although density is a necessary antecedent of the perception of crowding, it is not a panacea for social-psychological carrying capacity. Recent research has taken several approaches to demonstrate that crowding is influenced by personal and social factors. The first approach has led to several possible explanations as to why research has not verified a direct relationship between density and satisfaction.

It is suggested that the absence of adverse responses to high density areas is due to a variety of coping mechanisms (Altman 1975). Coping behaviors may be in the form of verbal, nonverbal, environmental and behavioral mechanisms. Heberlein (1977) has suggested that some activities and their settings are viewed by users as being favourable when associated with high densities. Specific hypotheses regarding the lack of correlation between density and satisfaction have been reported on by Heberlein (1977) and Heberlein and Shelby (1977). From their summary: (Other researchers' findings are included where appropriate as well as possible implications for this study).

1) Displacement

Displacement is a specific component of movement behavior characterizing negative reactive movements (Becker 1981). Users move away from an unacceptable situation, both in time and space. Skiers, for example, who become dissatisfied with increasing use levels, may move to less crowded areas. They are being displaced by skiers with norms more in accordance with high densities. Other forms of movement include active/passive migration and diurnal requirements. In active migration, skiers may seek a variety of trails as part of the experience. Passive migration is the selection of an area as the result of constraints external to the individual's expectations or preferences. A skier may choose an area to ski because other group members desire the same area. An illustra- tion of diurnal requirements is when skiers choose a particular trail or site to accomodate the amount of time they have to ski.

2) Dissonance Theory

This theory suggests people tend to order their thoughts in ways that reduce inconsistencies and associated stress (Festinger 1957). Skiers may rate their experience high, regardless of actual use conditions, in an attempt to reduce associated conflicts.

3) First-Time Participants

First-time visitors may have no expectations or norms as to what density levels will be. The perception of crowding in a particular setting may be influenced by the amount of crowdedness a user encounters during their first visit to an area (Nielsen et al. 1977). Individual differences in expectations and evaluations as to what density levels will be, may be established during the person's initial visit to the environment (Vaske et al. 1980).

4) Product Shift

Increasing use densities, over time, may establish a change in the definition of the experience. Satisfactions remain high regardless of higher density, since it is satisfaction expressed by different populations of recreationists.

5) Group Phenomena

Groups of individuals cogitate the experience of crowding and reduce the impact of those conditions which generate crowding stress (Baum et al. 1975). A group of skiers may less likely lose control over their social experience, since their regulation of these experiences is reinforced by norms established by the group.

The second approach in crowding research interprets the social and cognitive factors influencing evaluations of density. In "Social Interference Theory" preceptions of crowding or negative evaluations are a result of incompatibilities between a given level of density and the valued psychological goals or expectations an individual holds for an experience (Schmidt and Keating 1979; Stokols 1976). If, for example, a skier has a desire to experience solitude, this goal or expectation for that experience can not be achieved in high density situations. A sense of crowding or negative evaluation occurs.

Goals may vary in their vulnerability to density-related interferences. In addition, each experience is a qualitative, subjective, social-psychological event which may be diverse and abstruse (Kaplan 1984; Burch 1981). Several studies have illustrated the importance to recreationists of various density tolerant goals, which predict to some extent the degree of their crowding perceptions (Absher and Lee 1981; Becker 1981; Ditton et al. 1983; Schryer and Roggenbuck 1978).

A few studies have indentified several experiences or psychological goals that are important for skiers. Marshall (1980) found that observing wildlife, improving physical health, appreciation of nature and mentally refreshing were experiences most highly valued by Elk Island National Park skiers. The most important experiences sought by skiers in Rauhauser's (1979) study were exercise, being with friends, relationships with nature, escaping physical and social pressure, general learning and achievement. Similar findings were reported by Ballman (1980) and McLaughlin and Paradice (1980).

Another dimension of crowding perception is behavioral crowding or behavior which is objectionable. Behavior such as noise, rowdiness, vandalism or litter, may interfere with the fulfilment of important psychological goals for an individual, and reduce the tolerance for other users (Gramann 1982).

Previous research has shown that exposure to certain behavior is frequently associated with feelings of crowding among recreationists. Noise and noise-related complaints were a major factor in disturbance and reduced enjoyment in a study completed by West (1982). He concluded that crowding is "a multifaceted phenomenon that depends as much on the behavior of others as on density." Stankey (1983) found that more than two thirds of the people surveyed in four wilderness areas expressed that seeing litter was more disturbing than meeting too many people. Hammitt (1982), in a study of university students enrolled in outdoor recreation classes, found that they prefered to participate with a small group of intimate friends whose behavior is predictable. In summary, Gramann and Burdge (1984) state that threatening or objectionable behavior "confronts recreationists with disruptions in normal and expected behavioral patterns while simultaneously increasing the awareness of other people and creating an unfavourable evaluation of their presence." This, in turn, results in a negative evaluation of density as crowding.

Each recreational activity requires a defined amount of physical space in order for individuals to pursue their activity in an unconstrained fashion. Skiers, for example, use trails that are designed to accommodate their physical needs. Interference with these needs, due to excessive density, will cause physical crowding to be experienced (Choi et al. 1976). Users may be required to change their physical behavior in order to accommodate the activity of others. Skiers, for example, may constantly have to get off a groomed set track in situations of high density. Constraints are placed on usual physical behavior, cre- ating a feeling of crowding or negative evaluation of density (Gramann 1982). Heberlein (1977) also refers to this situation as the "facilities carrying capacity."

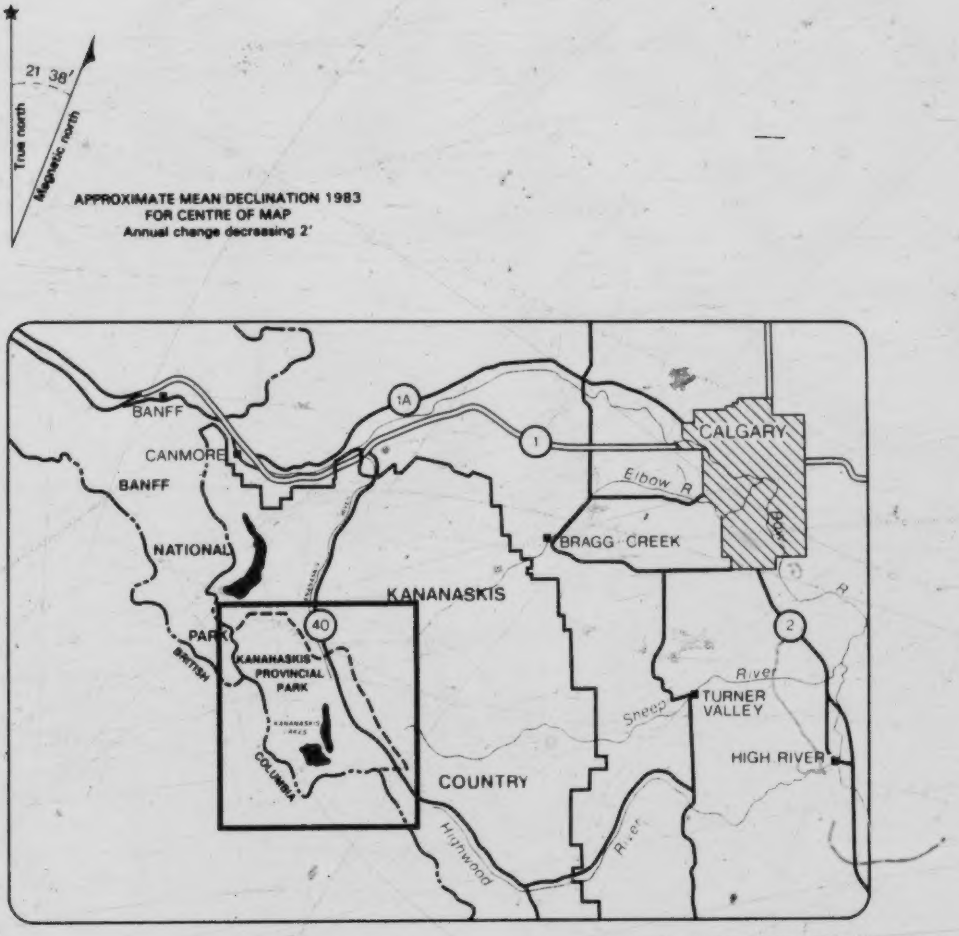
CHAPTER III

RESEARCH METHODOLOGY

Study Area

Kananaskis Provincial Park is located in the Canadian Rockies, 135 kilometers west of Calgary, Alberta (see Figure 1). The park encompasses a total area of 508 square kilometers, making it the largest Provincial Park in the province. The western boundary of the park consists of the Elk Range, and the Main Range of the Continental Divide. The Misty and Opal Ranges form the eastern boundary. The Kananaskis Range and the Spray Mountains lie within the park (see Figure 2). The elevation in the park ranges from 1604 meters at the Kananaskis River outlet, to a maximum of 3344 meters on Mount Sir Douglas. Most slopes are in excess of 30 percent, with the exception of the area east of the upper and lower Kananaskis Lakes. Average slopes are 2-5 percent near the lakes, and 9-15 percent below the Opal and Elk Ranges.

An extensive system of over 70 kilometers of groomed trails covers the facilitiy zone or park proper (see Appendix C). The trails range in difficulty from beginner to difficult. Skiers may select a variety of loops, depending on their desired interest. Trails tend to become more difficult as one skies towards the southern end of the system.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KANANASKIS PROVINCIAL PARK
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River
Sheep
TURNER VALLEY
HIGH RIVER
Highwood
River

Base map produced by the SURVEYS AND MAPPING BRANCH
DEPARTMENT OF ENERGY, MINES AND RESOURCES, OTTAWA

Map produced by ALBERTA RECREATION AND PARKS
DESIGN AND IMPLEMENTATION DIVISION
GRAPHICS, DESIGN BRANCH

FIGURE 1. REGIONAL LOCATION OF KANANASKIS PROVINCIAL PARK

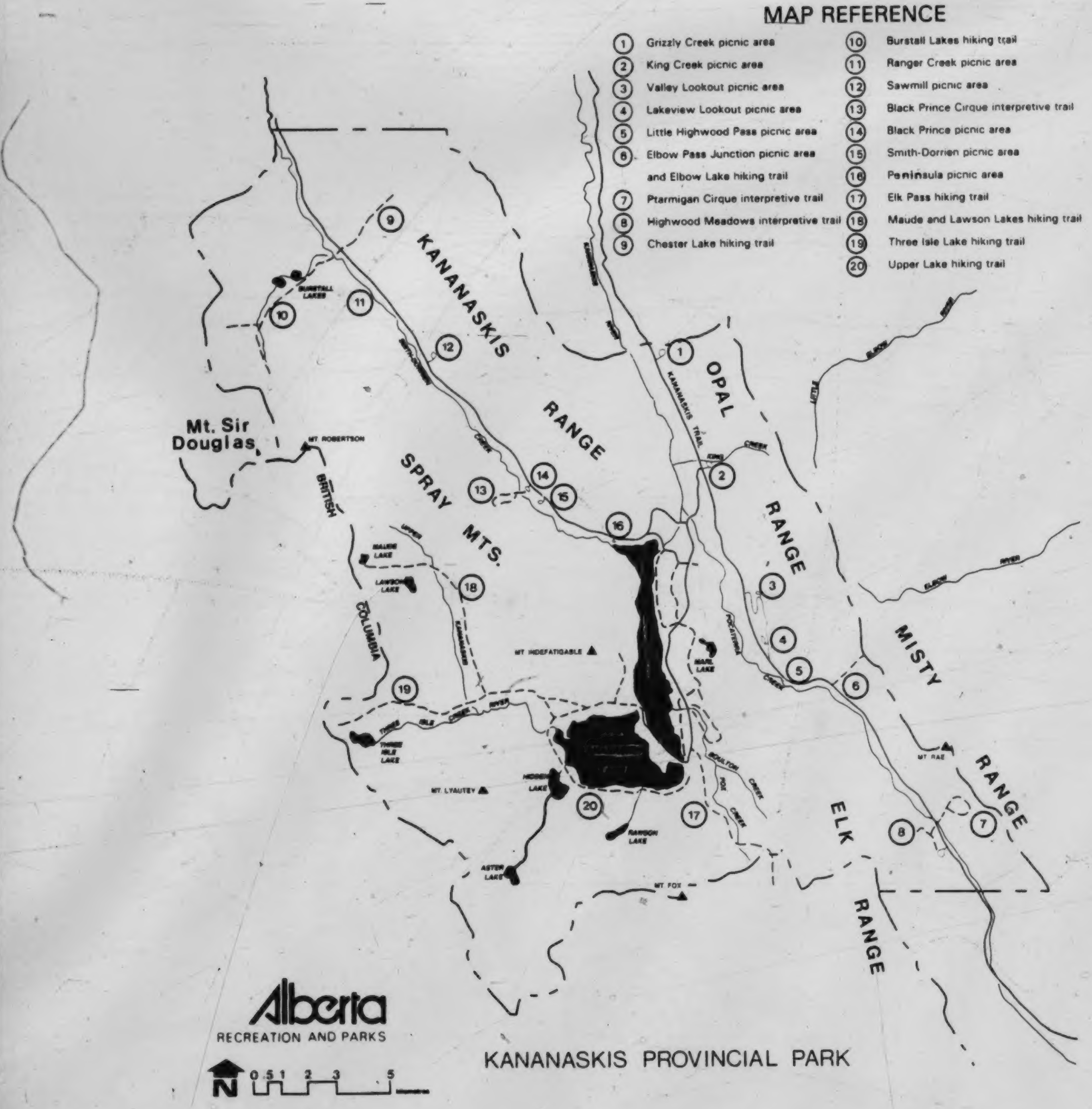
MAP REFERENCE
① Grizzly Creek picnic area
② King Creek picnic area
③ Valley Lookout picnic area
④ Lakeview Lookout picnic area
⑤ Little Highwood Pass picnic area
⑥ Elbow Pass Junction picnic area and Elbow Lake hiking trail
⑦ Ptarmigan Cirque interpretive trail
⑧ Highwood Meadows interpretive trail
⑨ Chester Lake hiking trail
⑩ Burstall Lakes hiking trail
⑪ Ranger Creek picnic area
⑫ Sawmill picnic area
⑬ Black Prince Cirque interpretive trail
⑭ Black Prince picnic area
⑮ Smith-Dorrien picnic area
⑯ Peninsula picnic area
⑰ Elk Pass hiking trail
⑱ Maude and Lawson Lakes hiking trail
⑲ Three Isle Lake hiking trail
⑳ Upper Lake hiking trail
KANANASKIS RANGE
OPAL RANGE
MISTY RANGE
ELK RANGE
SPRAY MTS.
BRITISH COLUMBIA
Mt. Sir Douglas
MT. ROBERTSON
BURSTALL LAKES
MAUDE LAKE
LAWSON LAKE
MT. INDEFATIGABLE
MARL LAKE
THREE ISLE LAKE
THREE ISLE CREEK
MT. LYAUTEY
HIDDEN LAKE
RAWSON LAKE
ASTER LAKE
MT. FOX
MT. RAE
KANANASKIS TRAIL
KING CREEK
POCATERRA CREEK
BOULTON CREEK
FOX CREEK
ELBOW RIVER
Alberta
RECREATION AND PARKS
N
0 .5 1 2 3 5
KANANASKIS PROVINCIAL PARK

FIGURE 2. BOUNDARIES OF STUDY AREA

The Pocaterra Ski Hut, Kananaskis Visitor Center, William Watson Lodge and Boulton Creek Restaurant provide skiers with a choice of warm up facilities.

The Smith Dorrien-Spray Road, between Spray Lake and the lower Kananaskis Lake, provides access to ski trails in the northwestern corner of Kananaskis Park. This recently opened area provides skiers with opportunities for backcountry skiing, racing, and training. During the course of this study, the Sawmill trails were trackset to provide an area for skiers to train for races. Some of the trails were closed to the public during organized race events. The Chester Lake Ski parking lot and Sawmill day use site provide access for backcountry skiing. Recent interest, as expressed by skiers following this study, has resulted in the development of additional set trails between Sawmill and Chester.

Trails to backcountry destinations such as Chester-Mogarth-James Walker Lakes, Robertson-Haig-French Glaciers, and Burstall Pass, are non-groomed touring trails which follow summer hiking trail routes. All access to the study trailheads is via plowed roads. Trails within the park traverse a variety of topography and vegetation.

Landforms and surficial geology of the park are both glacial and non-glacial in origin. The resulting landscape provides the visiting skier with a picturesque collage of mountain peaks, glaciers, high alpine and subalpine lakes, and forested valley bottoms.

Relief in the park is due to two major faults and a series of folds. The Lewis and Bourgeau Thrust faults resulted in the formation of the Spray and Elk Mountains. Regional synclines and anticlines built up additional relief (Kondla 1978).

Avalanche or landslide deposits, (colluvial veneers), commonly occur on the steep mountain slopes and ridge complexes in the park. Tallus deposits are located at higher alpine valleys and steep rock faces of the local mountain ranges. The lower slopes and valley bottoms contain alluvial, fluvial and morainal deposits. Bogs or shallow marches are usually associated with the Kananaskis lowlands. Isolated glacio-fluvial deposits can be found in Burstall Valley. (Lombard North Group 1977). Eskers, kames, terminal moraines, hummocky moraine, laterial moraines and ice marginal channels are resultant landforms of glacio-fluvial deposition found in the park. Typical mountain landforms such as cirques, aretes, horns, monuments and hanging valleys are present throughout the ranges.

Vegetation in the park has been reported on by Kondla (1978). From his summary: "Based on physiognomy and main controlling factors, the vegetation in the park can be divided into four major classes. These are: upland forest, wetland, alpine, and non-forested slopes."

In the upland forest within the park proper, east of the lower Kananaskis Lakes and other lower portions of the park, the lodgepole pine is the dominant tree. Englemann spruce, subalpine fir, douglas fir, and aspen, to a lesser extent, complete the upland forest types. Buffaloberry and grouseberry are the most common woody plants.

The area east of the lower Kananaskis Lake is characterized by localized wetland vegetation. Isolated pockets of tall willows are present, but most of the wetlands are dominated by bogbrich, low willows, sedges, and mosses.

Alpine vegetation is localized in response to climatic and topographical constraints at high elevations. Meadows and heaths are most abundant on relatively level areas, and slopes with southerly exposure. The transition from subalpine forest to alpine tundra is usually gradual.

Non-forested slopes (below treeline) are of three types: low elevation hillside and bedrock outcrops, talus slopes and cones, avalanche tracks and slopes. Low elevation hillsides support buffaloberry - herb vegetation while bedrock outcrops are extremely variable in plant cover. Lichens and various vascular plants are present, to various degrees. Avalanche slopes are scattered throughout the park where slopes are steep enough. A few are dominated by fireweed and scattered small alpine fir and spruce saplings. Often these slopes have a high diversity of herbaceous and woody plants, but they are not very abundant.

The climate in the park varies considerably due to the change in slopes, aspect, and elevation. As a result, overall changes in precipitation and temperature for the entire park often conceal local differences.

The mean January temperature is -9.5°C, although temperatures may go as low as -40°C, with the mean July temperature being 14°C (In Alberta, monthly mean temperatures are highest in July and lowest in January). Temperatures persisting below -18°C, for durations of one week or more, are rare. Chinooks, which may cause sudden rises in air temperature and strong west winds, occur on average 29 days throughout November to March (Longley 1966). The average depth of packed surface snow varies from 0.6 to 1.6 meters in the valley bottoms, and 1.8 to 2.4 meters near the Continental Divide and alpine locations. Late snowfalls have occured in the spring months of April and May or even June (Alberta Environment Report 1984; Environmental Sciences Center, Kananaskis).

The groomed trail systems avoid those portions of the park that are prone to avalanches; however, skiers using the backcountry, (nongroomed touring trails) are exposed to avalanche hazards and are so advised.

Snow-fall rates, which were less than normal, and frequent chinook conditions, may have biased the survey design in terms of use patterns. The nature and extent of this bias, if any, is unknown.

Survey Design

The actual survey portion of this investigation began January 22, 1984 and was completed on March 31, 1984. Maximum use levels in the park occured during weekends, while extremely low levels were a common characteristic of weekdays. On weekends, it was apparent that the number of skiers in the park was related directly to weather and snow conditions on the trails. The more ideal the conditions (mild weather, good snow fall) the greater the number of skiers. Use levels during weekdays was low and generally independent of skiing conditions. Most skiers, either during weekdays or weekends, were on day trips. Interviews were conducted on weekend days and 17 randomly selected weekdays. Eighty-six percent of the 184 surveys were collected on weekends.

On the weekends each day was divided into one-hour time blocks, beginning at 10:00 a.m. and ending at 5:00 p.m. The amount of time spent at any one sampling site was based on the relative use that site received. The previous year's day use winter statistics were consulted to estimate weekend use levels each site had received (Alberta Recreation and Parks 1983). An arbitrary scale was formulated so that each site could be categorized as to receiving dispersed, light, medium, heavy, or very heavy use. The number of one-hour time blocks spent at each site was proportionate to the use that site received. Constraints of time made it unfeasible to wait long periods for infrequent skiers in areas of dispersed, light, and medium use. Table 2 presents the interview locations and interview duration at each site. Skiers were selected through a systematic random sample, stratified by interview site, weekend versus weekday, and time of day.

At the beginning of each weekend day, a survey location was randomly selected (starting point), using the raffle principle. A marker bearing the name of each interview location was placed into a box. The box was shaken and then a marker was drawn at random. The first skier who crossed an imaginery line, near the interviewer, was interviewed. Every other (second) skier was then interviewed until the predetermined number of hour blocks had elapsed. In situations where a

TABLE 2

SURVEY LOCATION AND INTERVIEW DURATION DURING WEEKEND USE

Survey Location	Use Level	Interview Duration (Number of Hour Blocks)
Pocaterra Ski Parking	Very Heavy	Two
Boulton Ski Parking	Very Heavy	Two
Elk Pass Ski Parking	Very Heavy	Two
Kananaskis Visitor Centre	Heavy	Two
Boulton Bridge Ski Parking	Heavy	Two
Sawmill Day Use Site	Heavy	Two
Chester Lake Ski Parking	Heavy	Two
Elkwood Ski Parking	Medium	One
Upper Kananaskis Lake Ski Parking	Light	One
Trails	Dispersed	—

group of skiers (more than two) were encountered, only one person from the group was interviewed. Another site was then randomly selected, with no replacement of previously selected sites, and the interview procedure was repeated. Those sites which were not surveyed on a given day were randomly sampled on the following weekend day. Due to fluctuations in the level of use, as the result of weather and snow conditions, modifications were made to the survey design.

Fewer skiers were using the north end of the park proper as the season for skiing came to an end. Ideal snow conditions in the south end of the facility zone and backcountry areas attracted more skiers than normal. The researcher decided that the emphasis on interviewing at specific sites should be shifted to those areas receiving an increase in use. Interviewing at Pocaterra, Upper Kananaskis Lake, Kananaskis Visitor Centre, Elkwood and associated trails was subsequently reduced.

Unlike weekends, many of the interview sites during the week remained void of skiers for the entire day. This made sampling and interviewing difficult. Nevertheless, an effort was made to sample all interview sites during randomly selected weekdays. Each interview site was selected, based on a randomly chosen order at the beginning of the day. If there were no skiers at the first selected site, the next site in sequence was surveyed. This was repeated throughout the day, as often as possible, so as to increase the probability of contacting skiers.

Questionnaire Design

The survey instrument consisted of a four-page interview questionnaire. After several modifications, the format and content of the questionnaire was approved by the Regional Director, Kananaskis Region.

The interview survey was chosen for data collection for the following reasons:

1) To gain an appreciation of the complexities of the research problem and the range of variables that affect it.

2) To permit flexibility, such as allowing questions to be repeated for clarification.

3) To elicit responses that more closely approximate people's private feelings (Moeller et al. 1980).

4) To cross-check on the validity of data gathered by other methods (e.g., actual behavior).

Questions were largely adopted from other research instruments, suggestions made by Alberta Recreation and Parks personnel, recreation researchers and the researcher's own experience. This was done in an effort to reduce any biases contributed by any one source in determining the content of the questions, and to achieve the maximum clarity of the questionnaire. The entire questionnaire was pretested once. Following the pre-test, the questionnaire was reorganized, and several questions were changed or deleted.

The interview questionnaire (Appendix A) was designed to elicit information on: 1) user characteristics and demographic traits, 2) experiential expectations; and/or psychological outcomes, 3) preferences for environmental characteristics and management practices, 4) social den- sity, and 5) additional comments.

Parts one and five of the questionnaire consisted of questions pertaining to user characteristics and demographics so as to identify various characteristics of the survey population, and formulate a user profile. These portions of the survey were also intended to gain insights into what socio-economic and ski-trip characteristics could be used to predict differences in preferences and expectations.

The section on experiential expectations addressed the question why individuals ski. Questions in this regard were open-ended. It was the intent of the researcher to identify the social-psychological need states which motivate an individual's recreational participation (Driver and Brown 1978).

Part three was made up of questions asking skiers for their preferences for certain management practices and environmental characteristics.

The section on social density was designed to evaluate if and how encounter levels reduced the enjoyment or satisfaction of a skier's experience. Both hypothetical and reported situations were used.

Data Collection

Data was collected by the researcher. An interview procedure guide was initially prepared to assist the researcher (Appendix B).

The interview questionnaire was conducted at the various sampling sites, before and after the visitors had skied. Once a skier agreed to participate in the study, the interview would begin. If the skier was part of a group, he or she was asked to respond independently, in lieu of comments made by other members. If at any time during the interview the respondent was confused as to the meaning of a question, the researcher attempted to clarify.

The average duration of an interview was approximately ten minutes. Occasionally the interview duration exceeded ten minutes. This illustrates the fact that some skiers were very anxious to bring forth additional input. Upon completion of the interview, skiers were thanked for cooperating with the survey. The net response rate was 99 percent. The few skiers who chose not to participate usually explained that they were in a hurry for various reasons. The high response rate gives an indication of the skiers' willingness to cooperate in a study in which the results may be used to assist in the planning and management of future winter use in the park. Several skiers expressed an interest in obtaining study results. Quite often additional comments were made when skiers answered the research questions.

Data Analysis

Data analysis consisted of two parts. Part one dealt with the organization of the raw data, which included the following:

1) Questionnaires were screened for their usability.

2) Responses were coded and similar responses were collapsed into related clusters which were assigned labels.

3) The data were key punched using the Honeywell Multics system at the University of Calgary.

4) Variable names were assigned to variables used in computer programing.

Part two consisted of the statistical analysis of the data using SPSS: Statistical Package for the Social Sciences (Nie et al. 1975). This part was also sub-divided into sections so that the various statistical applications pertaining to data obtained from specific questions could be identified.

Section One

Information on the distributional characteristics of user characteristics and demographic traits was obtained from SPSS. Summary statistics included the following: 1) frequency distribution tables (both absolute and relative frequencies), 2) the mean, 3) median, 4) standard deviation, 5) standard error, and 6) minimum/maximum values.

Section Two

Items or responses were collected for the questions regarding the following:

i) experience expectations
ii) annoyance/appreciated attributes of other skiers
iii) preferences for environmental characteristics and management practices.

Skiers were asked to indicate the importance to them of each of the items given. A three point likert type format was used to register individual ratings. Table 3 describes the verbal equivalents of rating scores. The value zero (neutral) represents the percent of skiers who did not mention a particular item. It is not included in the calculation of the item mean score.

Based on prior research (Beard and Ragheb 1980; Kaplan 1984; Hammitt and Brown 1984; Schreyer and Roggenbuck 1978; Hammitt 1982; Gramann and Burdge 1984; McLaughlin and Paradice 1980; Ballman 1980) and underlying dimensions common to the responses, items were grouped into conceptually useful clusters.

TABLE 3

VERBAL EQUIVALENTS ASSIGNED TO RATING SCORES

ITEMS GIVEN						
Bother, Detracts, Annoy, Oppose			Neutral	Enjoy, Appreciate, Adds, Favor		
Importance				Importance		
Least	Moderate	Most		Least	Moderate	Most
-1	-2	-3	0	1	2	3

Summary statistics were obtained from the sub-program "reliability" of SPSS. This included item means, standard deviations and cluster means. The cluster mean represents the mean skier response to all items in that cluster. In addition, names were assigned to each cluster to describe the notion that the individual items are similar.

Section Three

Relationships between selected user characteristics and skier preferences were examined. The eight skier subgroups (based on user characteristics) were the nonmetric independent variables. A one-way analysis of variance, using the SPSS sub-program ANOVA, was used to determine if there was any significant difference on any of the item/ cluster means for 1) preferences for terrain and trail design and 2) preferences for facilities and services, when skiers were compared on the basis of the following subgroups:

1) Skiing ability
2) Previous skiing experience
3) Group type
4) Group size
5) Sex
6) Area chosen
7) Education
8) Occupation

The item/cluster mean scores on the preferences were considered as the dependent or criterion variables.

The descriptive statistic used to measure the strength of the effects or association of skier characteristics on cluster preferences is the ratio Eta^2. A value of Eta^2 = 0 indicates that there is no effect. The F test was used to test the null hypothesis that Eta^2 = 0. As such, the F values were used to measure the significance of relationships. Statistical significance of the F value depends on sample size. With a large sample size, such as in the present study, findings of statistical significance may occur where only minor relationships exist. A greater emphasis was therefore placed on the Eta^2 value.

Section Four

The SPSS subprogram Pearson Corr was used for the bivariate correlation analysis in evaluating the relationship between reported contacts and satisfaction. The measure used in characterizing the strength of this relationship, or closeness to a straight line, was the Pearson product-moment correlation coefficient (r). This numerical measure will be at a maximum (+1 or -1) when the correlation is strong and reduce to a minimum (0) as the correlation weakens. The value of zero denotes the absence of a linear relationship. The r^2 from the Pearson's r not only measures the strength of the linear relationship, but is also a measure of the proportion of variance in one variable explained by the other. It ranges from a minimum of 0 to a maximum of 1.0.

Study Limitations

The limitations of this study were as follows:

1) Due to limitations in time and funding, the opportunity to vary the survey instrument was not possible. This would have allowed the researcher to cross validate verbal responses by observation. If a skier, for example, expressed concern about trail etiquette of other skiers, observations would have allowed the researcher to see if the respondent was using trail etiquette him/her self.

2) Identical responses given by skiers may not have the same meaning for everyone. One person's concept of solitude, or perceived skiing ability may be considerably different than that of another individual.

3) The particular events of skier experiences throughout the day may shape the content of ones responses. Negative events on a particular day may influence a skier's responses. These responses may be different than those for an "idealized" situation.

4) Clusters for preferences (environmental characteristics and management practices) were formed by the researcher's own evaluation of similar dimensions. The recreation research does not have extensive mathematical and empirical research supporting such clusters.

5) Although the majority of the findings are applicable to cross-country ski areas in general, certain findings should not be generalized to other areas.

6) An attempt was made to keep inconsistencies in interviewing at a minimum. Irregularities may have occured due to the researcher's own disposition on a given day.

CHAPTER IV

DATA RESULTS AND DISCUSSION

The data was gathered in this study to investigate several research questions. There are three main issues examined. The first examines skier characteristics and the development of a potential skier profile. Then, secondly, preferences for environmental characteristics and management practices are identified. This includes discussing the possibility that different types of skiers, based on selected user characteristics, may differ in their preferences for certain aspects of the total recreational environment. The final issue examines social-psychological carrying capacity and crowding in relation to skier satisfaction. Analogous to this is the investigation of experience types.

To facilitate the discussion of the results of this study, each research question is reiterated and the most significant findings are interpreted. Where appropriate, tables are used to present detailed results of the data analysis.

In addition, results from this study are related to the findings of previous research. This serves the following two purposes: 1) cross-check on the validity and reliability of data gathered, and 2) inter-study comparisons. Inconsistent findings may, in some instances, be attributed to differences in research methodologies for each study.

Skier Characteristics

This section answers the following research questions:

1) Who constitutes the cross-country skier population in Kananaskis Provincial Park?

2) What socio-economic characteristics and demographic traits describe them?

Age

Mean age of skiers sampled in this study was 36 years, as shown in Table 4. Over half, 58.7%, of the skiers were between ages 21-35. Nearly 86% of the respondents were between 21 and 50 years of age, while only just over 44% of Canadians belonged to this group (Statistics Canada 1984a). This represents a significant age difference between the respondents and the population of Canada. The median age was 32 years. Adolescent skiers (ages 0-15) are not represented in the sampling because only individuals aged 16 or greater were asked to participate. A qualitative assessment based on personal observation is that the adolescent skiers comprise approximately 3% of the skier population.

TABLE 4

AGE OF SKIERS

AGE IN YEARS	FREQUENCY	PERCENT
20-24	12	6.5
25-31	78	42.3
32-44	59	32
45-63	31	16.7
64 +	4	2.2
TOTALS	184	100.0

Mean 35.5 Median 31.8

Sex

Table 5 shows the frequency distribution of skiers in terms of sex. As indicated, 64% of the respondents were male, 36% female. This proportion indicates more males are participating in cross-country skiing than females. The proportion of male respondents in the study is somewhat higher than that in the overall population of Canada (64% vs 49.5% respectively) (Statistics Canada 1984a).

Residence

Calgary was given as the place of residence by 91% of the skiers, as shown in Table 6. The next largest group, 5%, were from areas within a 50 kilometer radius of Kananaskis Provincial Park. It is evident that nearly all of the respondents live in relative close proximity to the Park. The remaining skiers, approximately 4%, were from other areas in Alberta and out of province.

Occupation

Table 7 shows that approximately 42% of the skiers classified themselves as professionals or managers, although a wide variety of occupations were represented. Technical and clerical positions, 14% and 16% respectively, were the next largest groups represented by the sample. In addition, only 6% of the respondents were students, compared to

TABLE 5

SEX OF RESPONDENTS

SEX	FREQUENCY	PERCENT
Male	118	64.1
Female	66	35.9
TOTALS	184	100.0

TABLE 6

RESIDENCY OF SKIERS

PROVINCE	AREA	FREQUENCY	PERCENT
Alberta	Calgary	167	90.8
	Kananaskis	3	1.6
	Edmonton	5	2.7
	Banff	2	1.1
	Seebe	1	0.5
	Cochrane	1	0.5
	Canmore	2	1.1
	Wetaskiwin	1	0.5
British Columbia	Victoria	1	0.5
Ontario	London	1	0.5
TOTALS		184	100.0

TABLE 7

OCCUPATION

Professional	37.5%
Managerial	4.3%
Tradesman	8.7%
Technician	14.1%
Clerical	16.3%
Unskilled Manual	1.6%
Semi-Skilled Manual	4.9%
Student	6.0%
Other	6.5%
TOTALS	100.0%

15.3% of the population of Canada (Statistics Canada 1984b). In summary, nearly 72% of the respondents had white collar jobs, as compared to only 49% of all Canadians.

Education

From Table 8, it is evident that most of the skiers had completed high school and the majority, 88%, had been to or were attending university, college, or technical school. Slightly over half, 51%, of the skiers had completed post secondary education. These skiers have a much higher education level than do most Canadians. In fact, only approximately 9% of the overall population have either a Bachelor's, Master's and/or Doctorate Degree (Statistics Canada 1984b). Nearly 16% of the respondents had some graduate studies and research background.

Skiing Ability

As shown by Table 9, the percentage of skiers who classified themselves as beginner was 8.7%. The intermediate and advanced group represent 61.4% and 29.9% respectively. Since skiers were not asked to rate their skiing ability, based on a given set of parameters, one respondent's evaluation of skiing ability may be considerably different than that of another individual.

TABLE 8

FORMAL EDUCATION

EDUCATIONAL LEVEL	FREQUENCY	PERCENT
Primary	4	2.2
Partial High/Vocational School	4	2.2
Completed High/Vocational School	15	8.2
Partial University/College/ Technical School	38	20.7
Completed University/ College/Technical School	94	51.1
Graduate Studies	29	15.8
TOTALS	184	100.0

TABLE 9

PERCEIVED SKIING ABILITY

ABILITY	FREQUENCY	PERCENT
Beginner	16	8.7
Intermediate	113	61.4
Advanced	55	29.9
TOTALS	184	100.0

Previous Skiing Experience

The data from Table 10 on years of skiing experience, reveals a relatively even distribution throughout the selected experience classes. Respondents who had skied for 10 years were the largest single grouping, representing 16% of the sample. Average number of years skied was 7.4 years.

Group Size

Table 11 shows that the average group size for skiing parties was 3.5 persons. Nearly one half, 45%, of the users were skiing in pairs. Only 4.2% of the groups were composed of 11 or more people. These parties were large organized groups.

Group Type

The ski group types are shown in Table 12. As indicated, 53% of the skiers were in groups composed of friends skiing together. Nearly 13% of the sample were people skiing alone and another 17.4% were families with no children.

TABLE 10

YEARS CROSS-COUNTRY SKIING

YEARS	FREQUENCY	PERCENT
1- 2	26	14.1
3- 4	37	20.1
5- 6	34	18.5
7- 8	25	13.6
9-10	36	19.6
11 +	26	14.1
TOTALS	184	100.0

Mean 7.36   Median 6.12

TABLE 11

GROUP SIZE

NUMBER IN GROUP	FREQUENCY	PERCENT
1	23	12.5
2	82	44.6
3- 4	45	24.5
5- 6	12	6.5
7- 8	9	4.9
9-10	5	2.7
11 +	8	4.2
TOTALS	184	100.0

Mean 3.54 Median 2.34

TABLE 12

GROUP TYPE

GROUP TYPE	FREQUENCY	PERCENT
Alone	23	12.5
Friends	97	52.7
Family and Friends	5	2.7
Single Family - No Children	32	17.4
Single Family - Children	12	6.5
Organized	9	4.9
Other	6	3.3
TOTALS	184	100.0

Skier Attire

Most skiers, 94%, are adequately prepared for skiing in terms of the clothing they wear and the equipment they use, as shown by Table 13. A subjective evaluation of skiers' attire lead the researcher to believe that the majority of the respondents were adequately dressed for meeting the needs of skiing (i.e., several layers of warm, light, loose-fitting clothes; wool or polypropylene; outermost layer being windproof; wear or carry a warm hat or toque; gaiters, gloves and carrying extra clothing in case of adverse weather).

User characteristics in the present study coincide with demographic data reported in previous studies. Table 14 compares several findings of the present study with those of previous studies. There is a general consistency between studies. Major trends are often very similar. In terms of sex, for example, a greater number of males are taking up cross-country skiing than in previous years. A profile of Alberta's skiers in 1976 indicated a greater number of females participating in cross-country skiing (Deeg 1983). Various studies indicate that the majority of nordic skiers are from the older age categories (i.e., 30+). Previous findings such as most skiers being of intermediate ability and skiing with friends concur with those of the current study. The average number of years of skiing experience was found to be 7.4 years. Education levels, as reported in this study, are similar to those found by Rosenthal (1977) and Rauhauser (1979). Individuals participating in cross-country skiing more than likely have a high level of education. The majority of those participating in nordic skiing come predominantly from a professional background.

TABLE 13

SKIERS ATTIRE

ATTIRE	FREQUENCY	PERCENT
Advanced	10	5.4
Moderate	173	94.0
Poor	1	0.5
TOTALS	184	100.0

TABLE 14

INTER-STUDY COMPARISON OF SELECTED SKIER CHARACTERISTICS*

	STUDY IDENTIFICATION			
Characteristic	Kananaskis Provincial Park 1981	Marshall 1980	Present Study	Rauhauser 1979
Mean Age	35	32	36	28
Age Category (Percent)		20-34 (52.8)	21-35 (58.7)	21-35 (74.2)
Sex				
Male	(58.3)	(67)	(64.1)	(60.4)
Female	(40.5)	(33)	(35.9)	(39.6)
(Percent)				
Skiing Ability				
Beginner	25.3	51.7	8.7	32
Intermediate	50.7	41.5	61.4	50
Advanced	20.0	17.4	29.9	18
(Percent)				
Average Group Size	3.59	2.7	3.5	3.8
Years Skied		2.2	7.4	3.2
Group Type				
Alone	6	11.4	13	5
Friends	15.5	37.4	53	54.3
Family	23.8	33.8	17.4	17.5
(Percent)				

*Sources (Alberta Recreation and Parks 1981; Marshall 1980; Rauhauser 1979).

Many, however, did not seem prepared to meet a winter emergency situation. Newby and Lilley (1980) suggest that some skiers may wear certain items to project a particular image. These images, although generalizations, are definitive. A skier clad in a "ski package" for example, may wish to convey that they are a part of the cross-country skiing phenomenon and are quite experienced. This may be contrary to the reality of their situation. A ski tourer, on the other hand, may tend to prefer functional clothing as to give the impression of being a wilderness skier. Although there is little data on perceived imagery as it relates to decision making, there may be merit in the idea that some skiers influence their selection of attire by the images they hold of themselves in cross-country skiing.

Table 15 cross-tabulates average years skied, backcountry skiing, preferred trail length and hours skied by skiing ability. As skiers become more adept with their skiing skills, they tend to prefer to ski on longer trails, and ski for greater durations. Advanced skiers represent the highest percent of skiers who choose backcountry destinations. There is clearly a trend that years skied, preferred kilometers, and duration skied and proportion of skiers skiing in the backcountry all increase with greater skiing ability. Although skiers stated a preference for longer trails (mean distance of 20-30 km's), this researcher suspects that respondents tended to exaggerate the length of trail they prefer relative to the actual distances they skied.

The following section includes information on length of stay, reasons for area selection, type of skiing while in the park, skiing categories and other activities.

TABLE 15

CROSS-TABULATION OF SELECTED SKIING CHARACTERISTICS

	SKIING ABILITY		
CHARACTERISTIC	BEGINNER	INTERMEDIATE	ADVANCED
Average Years Skied	1.5	5.8	12.3
Preferred Trail Length (Average; KM's)	17.5	23.3	27.5
Preferred Hours Skied (Average)	4.1	4.3	5.1
Backcountry Skiing	6%	16%	18%

Mean Trail Length Preferred by Skiers: 20-30 KM's

Length of Stay

Day trips were the most common length of time for skiing, as shown by Table 16. Ninety-three percent of the skiers were on day trips that lasted 1/2 day to 1 day. Only 7% of the skiers were on overnight trips and stayed mainly in cabins, tents or campers.

Area Selection

Reasons given for selecting the area to ski are shown in Table 17. All the respondents gave at least one reason. Nearly half of all the skiers chose the ski area either because of snow conditions (48.4%) and proximity (44%). 18% (N=34) gave both reasons. As previously noted, 91% of the skiers traveled from Calgary to the park. An interesting point is that these skiers are willing to travel approximately 129 km's to reach their cross-country skiing destination. This indicates a relatively high degree of commitment by skiers when selecting an area. They seem willing to drive a substantial distance to satisfy their needs. Over one third (n=65, 35.4%) of the skiers sited the trails (layout/design) as one of their reasons in selecting the study location for skiing. Snow conditions, proximity and trail selection are factors which most certainly contribute to the experiences sought by skiers. Facilities do not seem to be a major reason for selecting an area. This researcher believes that skiers are less enthusiastic in finding areas over developed and that they prefer areas which, for the most part, are in a natural state.

TABLE 16

LENGTH OF STAY

Day Use	171	92.9%
Overnight	13	7.1%
TOTALS	184	100.0%

TABLE 17

SKIERS' REASONS FOR SELECTING AREA

REASON	FREQUENCY	PERCENT
Snow Condition	89	48.4
Proximity	81	44
Trails	65	35.4
Other	53	28.7
Scenery	41	22.3
Lack of People	22	11.9
Familiarity	21	11.4
Facilities	14	7.7
Recommended	10	5.5
RESPONDENTS	184	100.0

Skiing Type

Table 18 shows the percentage of skiers who were participating in a given type or category of skiing on the interview day. The majority of the skiers, 83%, pursued nordic skiing while in the park. A further 14% chose ski touring. Ski mountaineering was carried out by only .5% of the skiers. This low participation level may be attributed to the fact that ski mountaineering is highly specialized and requires advanced skills and experience which are beyond the average skier. Racers comprised slightly over 3% of the sample.

Skiing Categories

In Table 19, the proportion of skiers who participate, to various extents, in different types of skiing is given. Those ski categories which are not pursued by the highest proportion of skiers include ski touring (22.1%), telemarking (2%), racing (7.4%) and ski mountaineering (4.1%). Racing is taken up by more individuals than the percent given indicates. In fact, ski racing is one of the most organized and popular winter sports in Alberta. The reason for the discrepancy in this study is because of the following: 1) race events are held in different areas throughout the province and racers were therefore undersampled in the study area and 2) a large sample was not taken from the one race event held in the park so as to maintain random selection of

TABLE 18

SKIER CLASS

CATEGORY	FREQUENCY	PERCENT
Nordic	152	82.6
Ski Touring	25	13.6
Racing	6	3.3
Ski Mountaineering	1	0.5
TOTALS	184	100.0

TABLE 19

SKIING TIME (PERCENT) VERSUS SKIING CATEGORIES

SKIING TIME (PERCENT)	PERCENT SKIERS SKIING IN CATEGORIES					
	NORDIC	SKI TOURING	TELEMARKING	RACING	SKI MOUNTAINEERING	DOWNHILL
0	6	77.7	97.8	92.4	95.7	51.6
5	3.3	1.1		3.2		8.2
10	1.6	2.2	.5	2.2	1.6	10.9
15	2.1	1.1				
20	1.1	1.6	.5	.5	.5	6.0
25	1.1				.5	1.6
30	2.7	3.3	.5		.5	4.3
35	1.1	1.6				
40	2.7	1.6	.5			3.8
50	7.6	1.6		.5	.5	7.6
55	.5					
60	3.8	.5			.5	1.1
70	2.7	1.6				1.1
75	1.1	1.6				
80	9.8	.5		.5		1.1
85	.5					
90	10.9	1.1		.5		.5
95	6	1.1				2.2
100	35.3	1.6				
TOTALS	100.0	100.0	100.0	100.0	100.0	100.0

skiers in general and to avoid potentially homogeneous response patterns. The percent of respondents who participate in a given skiing category, over 50% of the time, are as follows: nordic (70.6%), ski touring (8%), racing (1%), and downhill (6%). It is evident that the respondents who were surveyed prefer, for the most part, to nordic ski and, to a lesser extent, ski tour.

Other Activities

Table 20 shows that most skiers, 89%, did not participate in recreation activities other than cross-country skiing, during their winter visit to the park. Slightly over 11% of the respondents mentioned they participated in another activity. Of the sample subset that mentioned participating in another activity, 62% (or over 7% of all respondents) indicated that they were either camping or staying overnight, as shown by Table 21. The group type of those camping differed somewhat from the "average" skier in the study in that the average skier was usually with family or friends, while the skier camping was either with friends (N=9) or as couples (N=4) (i.e. no children). Although no direct reason for this was found in analyzing the data collected, considering the nature of winter camping, families with children are most likely not inclined to pursue this activity. Nearly 2% (N=3) of all respondents did some ice-fishing, or photography.These activities are apparently

TABLE 20

OTHER ACTIVITIES BESIDES SKIING

Yes	21	11.4%
No	163	88.6%
TOTALS	184	100.0%

TABLE 21

OTHER ACTIVITIES

ACTIVITY	FREQUENCY	PERCENT
Overnight - Camping	13	7.1
Photography	3	1.6
Ice Fishing	3	1.6
Snow Shoeing	1	.5
Ice Climbing	1	.5
No Response	163	88.6
TOTALS	184	100.0

compatible with cross-country skiing. Show shoeing was carried out by .5% of the sample. This low use level was substantiated by observing very few individuals snow shoeing in areas where skiers were present. This researcher believes that cross- country skiing and snow shoeing are interactivities which are not compatible.

Skier Preferences

Information on skier preferences for environmental characteristics and management practices have been identified by the following research question:

1) What are the preferences of cross-country skiers for environmental characteristics and management practices?

To simplify discussion of results, and illustrate the findings, tables will be used where appropriate. Preferences for environmental characteristics and facilities/services are described in a series of paired tables. The first table identifies the individual components of the skiers' preferences and includes importance ratings, frequency distribution and item means. The second table lists mean cluster scores in ranked order and provides a verbal description for each score.

Environmental Characteristics

Table 22 lists all the items, in terms of terrain and trail design, that skiers identified as either adding or detracting from their skiing satisfaction. Each skier was asked to give a maximum of three items, if possible, which had a positive influence on their satisfaction, and three which had a negative one. The evaluation of the importance of each item by percent of skiers is also indicated. The neutral category does not represent the percent of skiers evaluating a particular item as being of neutral importance. It represents the percent of skiers who did not mention a particular item. The researcher interpolated the findings and was able to identify several preference trends. Table 23 identifies the importance of the items, in the context of clusters, which are listed in ranked order.

The top four clusters, which add in some degree to skier satisfaction are: 1) terrain variety; 2) trail difficulty/variety; 3) trail type; and 4) trail layout.

Opportunities for vistas, scenery, and terrain which allows skiers to climb and descend appear to be a major priority among skiers. Nearly 60% (N=110) of the sample responded that varied terrain, specifically changes in topography, adds to their skiing satisfaction. Although some skiers (N=26, 14%) mentioned that trails of various difficulty levels was important, nearly twice as many (N=48, 26%)

TABLE 22

INDIVIDUAL COMPONENTS OF SKIER PREFERENCES FOR TERRAIN AND TRAIL DESIGN BY IMPORTANCE

		Effect on Skier Satisfaction (Percent)										
		Detracts					Adds					
Cluster	Item	Most	Moderate	Least	Total	Neutral	Most	Moderate	Least	Total	Item Mean	Standard Deviation
Terrain Variety	1 Scenery				0	77.2	6.5	6.5	9.8	22.9	.424	0.88
	2 Climb/Descend	2.2		1.1	3.3	37	50.5	8.7	0.5	59.7	1.62	1.58
	3 Vistas				0	82.6	2.7	9.8	4.9	17.4	.326	0.76
Trail Difficulty/ Variety	4 Easy	2.7	1.1	2.2	6	91.3	1.1	1.6		2.7	-.06	0.69
	5 Intermediate				0	94.6	0.5	3.3	1.6	5.4	.098	0.43
	6 Advanced	2.2	4.9	1.1	8.2	85.9	1.6	1.1	3.3	6	-.071	0.79
	7 Trail Rating-Variety	1.1	0.5	1.1	2.7	71.2	7.1	13.0	6.0	26.1	.478	1.06
Existing Trails	8 Logging Roads	0.5	0.5	1.1	2.1	97.3	0.5			0.5	.022	0.36
	9 Hiking Trails	4.3	2.2	1.6	8.1	90.8			1.1	1.1	-.179	0.69
	10 Power Lines	4.9	1.6		6.5	93.5				0	-.179	0.69
	11 Unplowed Roads	0.5	0.5	1.6	2.6	96.7		0.5		0.5	-.033	0.33
Trail Slope	12 Steep	14.1	7.6	1.6	23.3	69.0	2.7	4.9		7.6	-.413	1.37
	13 Moderate				0	87.5	6.0	4.3	2.2	12.5	.288	0.81
	14 Level	9.8	6.5	2.2	18.5	79.3	1.1	1.1		2.2	-.391	1.08
Trail Length	15 Long	2.7	3.8	1.6	8.1	87.5	1.1	1.1	2.2	4.4	-.098	0.76
	16 Short	1.6	3.3	2.7	7.6	90.8		1.1	0.5	1.6	-.114	0.59
Trail Width	17 Narrow	10.3	9.2	3.3	22.8	75.0	0.5		1.6	2.1	-.495	1.08
	18 Wide	1.1	0.5		1.6	85.9	3.3	4.9	4.3	12.5	.196	0.79
Trail Layout	19 Open Areas	1.1	2.2		3.3	92.4	0.5	1.6	2.2	4.3	-.055	0.57
	20 Wooded Areas	1.1	1.1	1.6	3.8	88.0	1.6	3.8	2.7	8.1	.082	0.69
Trail Type	21 Groomed-Single	2.2	0.5	0.5	3.2	83.2	4.3	3.8	5.4	13.5	-.179	0.89
	22 Groomed-Double	1.6	1.1		2.7	87.0	1.1	4.9	4.3	10.3	.103	0.72
	23 Unbroken	1.6	0.5	0.5	2.6	91.3	0.5	1.6	3.8	5.9	.022	0.57
	24 Destination	3.3	4.9	1.6	9.8	85.9	1.1	1.6	1.6	4.3	-.130	0.82
	25 Loops-Multiple		0.5		0.5	79.9	3.3	10.9	5.4	19.6	.359	0.82
Skier Safety	26 Trail Condition	14.7	12.5	7.1	34.3	60.9	1.1	1.6	2.2	4.9	-.674	1.28
	27 Avalanche Area	1.6	0.5	0.5	2.6	97.3				0	-.065	0.41
Other		7.1	0.5		7.6	89.7	1.1	1.1	0.5	2.7	-.163	0.88
No Response				35.9		30.4			33.7			

TABLE 23

SKIER PREFERENCE FOR TERRAIN AND TRAIL DESIGN CLUSTERS BY IMPORTANCE RATING

	CLUSTER ANALYSIS		
Terrain/Trail Design Cluster	Cluster Mean	Standard Deviation	Value Label-Satisfaction
Terrain Variety	.790	.608	Adds
Trail Difficulty/ Variety	.111	.360	Adds
Trail Type	.107	.363	Adds
Trail Layout	.038	.403	Adds
Existing Trails	-.103	.267	Detracts
Trail Length	-.106	.429	Detracts
Trail Width	-.149	.534	Detracts
Trail Slope	-.172	.490	Detracts
Skier Safety	-.370	.667	Detracts

expressed that trails variety, in particular trails through various natural area types, was of greater significance. The degree of trail preparation, or trail type, appears to be a contributing factor in skier satisfaction. Twenty-five (13.5%) skiers preferred single track set trails, while nineteen (10.3%) skiers stated double track set trails were important to them. Of all the respondents who were back-country skiers (16% of the sample), the majority (76%) volunteered in an open ended response, a preference for unbroken trail. Nearly one fifth (N=36) of the sample indicated that multiple loops and the opportunity to ski a variety of routes was a definite asset. A few skiers gave positive responses with respect to trails containing a variety of vegetation, both open (N=8, 4.3%) or (N=15, 8.1%) closed. The clusters which add to skier satisfaction all deal, to some extent, with trail layout.

This suggests that skiers prefer terrain which is scenic, natural, and has ample topographical variety. Trails favoured by skiers are of moderate slope, wide, groomed, and pass through different vegetative types.

Clusters which detract from skier satisfaction are: 1) existing trails; 2) trail length; 3) trail width; 4) trail slope; and 5) skier safety.

Trails which are associated with power lines and summer hiking trails were not favoured by 12 (6.5%) and 15 (8.1%) skiers respectively. These skiers avoid features which are man-made. The steep slope and narrow width of some hiking trails used for skiing, are unsuitable for some skiers, as was indicated by 23.3% and 22.8% of the sample respectively. Skiers are also critical of trail length, width and slope. In particular, trails which are either too long or short, steep or level, and narrow may be associated with negative evaluations.

The single most important item undesirable to skiers was ski trail conditions. Slightly over one third (34.3%) of the respondents expressed that trail conditions which were not favourable would most certainly detract from their satisfaction. Respondents who referred to trail conditions in terms of skier safety were usually expressing a concern about exposed material, such as rock, making trails unsafe or hazardous to ski on. The concern that an area was prone to avalanches was mentioned by only 2.6% of the skiers. This leads the researcher to believe that many cross-country skiers may not be aware of the hazards associated with mountain environments in the winter or they just chose to ignore them. Sutherland (1986) reports in his study on "Managing the Avalanche Hazard Faced by Backcountry Skiers" that skiers believe avalanches are unlikely to pose a threat to themselves personally. Respondents considered avalanches to be undramatic snow slides.

The major items that detract from skier satisfaction are essentially features that pertain to trail design. These include trail slope, length, width, and inter-trail use such as hiking-skiing trails. Poor trail conditions, in terms of skiing and skier safety is the most important item having a negative influence on skier satisfaction, having been cited by 36.9% of respondents.

Facilities and Services

To identify user amenities which skiers viewed as desirable, the survey asked: "What type of facilities and services do you feel are important to have in an area designated for cross-country skiing?" (See Appendix A, Question No. 17). Tables 24 and 25 show which items and clusters of user amenities were favoured, to varying degrees, by skiers.

The clusters of 1) Visitor Center, 2) access, 3) trail amenities, and 4) trail signs are most favoured by skiers. Thirty-seven skiers commented that the Visitor Center was important to them because it was a facility where ski information could readily be obtained. In addition, the researcher observed that the Center was commonly used as a resting and warm-up facility. The provision of parking facilities and staging areas was also relatively important. Thirty percent of the skiers (N=56) expressed their support for such developments. Some

TABLE 24

INDIVIDUAL COMPONENTS OF SKIER PREFERENCES FOR FACILITY AND SERVICES BY IMPORTANCE

Cluster	Item	Importance of User Amenities (Percent)						
		Most	Moderate	Least	Total	Neutral	Item Mean	Standard Deviation
Development Level and Character	No Facilities, Only Access and Parking	5.4	0.5	0.5	6.4	93.5	.179	.70
	Few Facilities, Unobtrusive With Natural Surrounding	3.3	6.5	17.9	27.7	72.3	.408	.76
	Leave as is	10.9	1.6	2.2	14.7	85.3	.380	.96
Access	Parking Lots/Staging Areas	14.1	9.2	7.1	30.4	69.6	.68	1.12
	Access Routes to Ski Areas Kept Open	1.1	4.9	2.7	8.7	91.3	.16	.55
Trail Signing	Sign Trail Routes	5.4	7.1	7.1	19.6	80.4	.375	.84
Trail Maps	Trail Information	1.6	9.2	8.7	19.5	80.4	.321	.71
Skier Safety	Patrol Backcountry/Set Track Trails	0.5	1.1	2.2	3.8	96.2	.06	.33
	Emergency Phones		1.6	0.5	2.1	97.8	.038	.26
	First Aid Stations	2.2	1.6	0.5	4.3	95.7	.103	.51
Visitor Center	Ski Information and Warm-up	10.9	7.6	1.6	20.1	79.9	.495	1.03
Accommodation	Hostels	1.1	0.5	0.5	2.1	97.8	.049	.35
	Lodges	1.1	1.1	0.5	2.7	97.3	.06	.38
	Huts	1.6	2.7	2.7	7	92.9	.13	.52
Trail Amenities	Log Benches	2.7	3.3	2.7	8.7	91.3	.174	.61
	Out Houses Along the Trails	19.6	16.3	5.4	41.3	58.7	.967	1.24
	Small Open Shelters Along the Trails	6.5	4.3	5.4	16.2	83.7	.337	.84
	Litter Containers	0.5	2.7	0.5	3.7	96.2	.076	.40
Food Services	Restaurant	2.2	2.2	1.6	6	94	.125	.53
	Snack Bar	0.5	1.1	0.5	2.1	97.8	.043	.31
	Convenience Store	1.1			1.1	98.9	.033	.31
Trail management	Grooming the Trails	6.5	4.9	4.3	15.7	84.2	.337	.85
Other			1.1	0.5	1.6	98.4	.027	.22
No Response				23.4	23.4	76.6	.23	.42
Don't Know		0.5		0.5	1.0	98.9	.022	.23

TABLE 25

PREFERENCE FOR FACILITIES AND SERVICES CLUSTERS BY IMPORTANCE

Cluster	Cluster Mean	Standard Deviation	Value Label-Importance
Visitor Center	.495	1.030	Most
Access	.418	.631	Most
Trail Amenities	.389	.426	Most
Trail Signing	.375	.84	Most
Trail Management	.337	.846	Moderate
Development Level and Character	.323	.497	Moderate
Trail Maps	.321	.709	Moderate
Accommodation	.080	.236	Least
Skier Safety	.067	.231	Least
Food Services	.067	.225	Least

skiers (N=16, 8.7%) also indicated that access routes, such as the Smith Dorrien Highway, should be kept open to provide access to alternate areas. This might be interpreted as an appropriate response to meet a specific need; In particular, providing access to backcountry areas, separate from the facility zone. This suggests that some skiers (N=29, 16%) prefer to ski in areas which provide other opportunities, such as ski touring, and are less developed.

Skiers are also supportive of trail amenities, such as out houses (41.3%), shelters (16.2%), litter containers (3.7%) and benches (8.7%). The provision of such amenities are viewed as a desirable component of trail design. About 70% of the respondents who supported trail amenities, also suggested that these facilities be simple, rustic, and yet functional. Trail signing, which was favoured by nearly 20% of the respondents, illustrates skiers' concern for their own safety and ease of skiing within a trail system. A few skiers (N=5, 2.7% of respondents) also felt that distance markers along the trails would be an improvement.

The clusters of 1) trail management, 2) development level and character, and 3) trail maps are all moderately favoured. Grooming trails is a management option, favoured by approximately 16% (N=29) of the respondents. This is an option that should be carefully weighed before implementing since grooming trails in certain areas may not be appropriate when taking skier preferences into account. Such is the case in the backcountry, where skiers prefer to set their own track. Skiers interviewed gave the impression that they accepted the facilities already provided in the facility zone, but oppose, to a certain extent, the development of further facilities. Stankey (1973) found similar findings in his study on carrying capacity. In addition, several skiers preferred facilities that are of the variety of design that is unobtrusive with the natural surrounding. This was indicated by almost 30% of the respondents. The provision of certain types of information, such as through trail maps, was stated to be important by 19.5% of the skiers interviewed. These preferences might suggest skiers are most likely to respond favourably to some assistance in ski trail selection, by the managing agency. No skiers mentioned an interest with developing techniques of route finding, although skiers may have different opinions regarding the degree or amount of trail information provided.

Accommodation, skier safety, and food services are clusters which are slightly favoured by users. About 12% of the respondents mentioned a preference for some type of accommodation. Of those who expressed such an interest, nearly 60% (or 7% of all respondents) favoured a system of alpine huts and bivovac shelters. Since few skiers expressed such an interest in these types of facilities, management decisions concerning potential developments should involve further research before implementation. The slightly favorable attitude toward patrol personnel, and the idea of emergency phones and first aid stations may indicate that selective skiers view these items as sources of information and protection against skiing mishaps. Although some skiers are supportive of food services such as restaurants (N=11, 6%), snack bars (N=4, 2.1%) and convenience stores (N=2, 1.1%), the majority of skiers did not mention such services as being important. Those skiers less enthusiastic about the possibility of encountering food service facilities may perceive such features as contemporary evidence of an urban environment and therefore deemed as inappropriate in an ideal skiing setting.

User amenities such as signing, information, support facilties and services usually require the greatest expenditure by agencies. It is therefore important that managers and planners establish which ones are most preferred by skiers.

In the present study, skiers were asked to state their preferences in a hypothetical context, and not make a site-specific assessment of facilities and services as is the case with many other studies. Comparing current study findings regarding preferences for facilities and services with findings from other studies is therefore somewhat problematical and considered to be of dubious value by the researcher.

Supplementary Preferences

This section presents additional information on skiers' opinions and preferences of selected management practices. This includes findings on the following issues: 1) information sources used by skiers in selecting the study area to ski; 2) willingness to pay for groomed versus non-groomed trails and backcountry areas; 3) opinion on continuing or changing park policy for pets; and 4) interest in guided cross-country ski trips.

Information Sources

Table 26 identifies what information sources skiers most commonly used when selecting the study area to ski and the importance of each. The two most popular information sources used by skiers include other people or friends (44%) and previous experiences (35%). Most of the respondents choose personal or external sources before using information sources provided by the agency. This suggests that although managers and skiers may recognize certain kinds of information as being of common interest, (i.e., skiing conditions) the aquisition of information remains a complex process.

TABLE 26

INFORMATION SOURCES USED IN SELECTING AREA BY IMPORTANCE RATING

Information Source (Item)	Importance (Percent)					
	Most	Moderate	Least	Total	Item Mean	Value Label
Other People/Friends	27.2	13.0	3.8	44	1.11	Often
Previous Experience	26.6	7.6	0.5	34.7	.96	
Maps	6.0	30.4	12.5	48.9	.91	
Information Center	16.8	9.8	4.9	31.5	.75	
Guide Books	7.6	7.1	4.9	19.6	.42	
Organizations	4.9	6.5	2.7	14.1	.30	
Publications	4.9	3.8	2.7	11.4	.25	
Radio	3.3	2.2	2.2	7.7	.16	
Telephone	1.1	4.3	1.6	7.0	.14	
Newspaper	1.6	1.6	0.5	3.7	.09	
Television		1.6	1.6	3.2	.05	
Equipment Stores		1.6	0.5	2.1	.04	Seldom

Information about trails was obtained from a variety of sources which included maps, guidebooks and the Visitor/Information Centers. These were all considered being of primary importance. Weather and snow conditions information was primarily sought from the information centers and phone in service. Sources such as radio and television were viewed as slightly important. Some of the comments made by skiers, however, indicate that the reports of ski conditions which many radio and television stations broadcast for commercial downhill ski areas should also be provided, to the same extent, for cross-country skiing. This would undoubtedly increase the importance of such media. Organizations, newspapers, equipment stores, and publications are information sources which were sought by only a few skiers.

In terms of a site-specific assessment of whether the park provided adequate information for skiers to enjoy their skiing, Table 27 shows that 91% of the skiers surveyed felt the facilities supplying information were adequate. Only 7% believe the information system in the park hampered their enjoyment. The most common information sought by skiers was trail information. Trail signing, ski conditions information and the availability of information were all viewed as positive. Five (2.7%) skiers did express a dissatisfaction as to not knowing where to obtain specific types of skiing information on skiing conditions, weather and trails. Although this does not represent a significant

TABLE 27

SITE-SPECIFIC ASSESSMENT OF INFORMATION NEEDS

	INFORMATION NEEDS					
	FREQUENCY (PERCENT)					
	Trail Map	Trail Signing	Ski Conditions	Obtaining Information	No Response	Total
Category Label Adequate						
Yes	39 (21.2)	14 (7.6)	8 (4.4)	41 (22.3)	66 (35.9)	168 (91.3)
No	4 (2.2)	4 (2.2)		5 (2.7)		13 (7.1)
No Response					3 (1.6)	3 (1.6)

proportion of skiers, it does suggest that not all skiers are aware of the existance of specific sources of information. In an attempt to communicate information effectively, managers might make users aware of certain places as a source of useful information. Skiers will then have a specific source when they seek out information. Perhaps a symbol for cross-country information might facilitate this.

Willingness to Pay

Fisherman, hunters and campers have accepted their obligation to pay at least a portion of the costs they incur. Cross-country skiers, on the otherhand, have enjoyed skiing in areas which are free of charge. Reductions in management budgets and high maintenance costs for ski trails in terms of trail development, maintenance and the provision of access/parking lots are being absorbed by all Albertans. Whether the general non-skiing public should continue to provide revenue for services used by skiers, is a question which may have to be addressed in the future. Willingness of skiers to pay a fee for groomed versus non-groomed trails and for the use of backcountry areas was determined by specifically asking for skiers' opinions on the subject. It should be noted that track setting trails is usually carried out in conjunction with the grooming of trails. Table 28 shows that there is some support for a fee-based system for skiers using groomed trails.

TABLE 28

WILLINGNESS TO PAY A USER FEE FOR GROOMED TRAILS VERSUS NON GROOMED TRAILS

	WILLINGNESS	
	FREQUENCY (PERCENT)	
Comments	Yes	No
Park Sticker	37 (20.1)	
It Should be Free	1 (0.5)	5 (2.7)
Nominal Charge	32 (17.4)	
Would Break Own Trail		7 (3.8)
Prefer Unbroken Trail		7 (3.8)
Depends What is Provided	7 (3.8)	
Other	8 (4.4)	11 (6.0)
No Response	28 (15.2)	41 (22.3)
TOTALS	113 (61.4)	71 (38.6)

Approximately 61% of the respondents would be willing to pay a user fee for groomed versus non-groomed trails, while 39% disagreed with the idea. Differences in sex, type of skiing group, skiing ability and age did not make substantial differences in the respondent's willingness to pay for groomed trails versus non-groomed trails. Findings do suggest that the proportion of backcountry skiers who do not support user fees (22.5% or 55% of all backcountry skiers) is slightly higher than those who do (11.5% or 45% of all backcountry skiers). In comparing skiers who ski on trails within the park proper, nearly twice as many supported user fees (65% of all park proper skiers) than those who did not (36% of all park proper skiers). Skiers supporting user fees for groomed trails are most likely to be park proper skiers, rather than backcountry skiers. Skiers were most supportive of user fees if they were reasonable (17%) or incorporated in a park sticker (20%), allowing users to ski on government owned lands. Skiers are somewhat supportive of a fee-based system, if they are made aware of what the fee funds are providing. Such a system may gain greater support if the agencies involved inform the users what their money provides in terms of services and maintenance. In addition, since public ski trails cost money, users could be told of the associated expenditures, to possibly gain further support. Those skiers who did not support user fees gave the following as main reasons: 1) it should be free (2.7%); 2) taxbased funding pays for trails (2%); 3) would break their own trails (3.8%); and 4) ski touring does not require track-set trails (4%). Some skiers stated they would rather break their own trails than have to pay for groomed trails. These skiers may perceive fees as an infringement on their freedom of choice. Others, for example ski tourers, are less likely inclined to support a fee based system for groomed trails, since their type of skiing is carried out in areas where trackset trails are not necessary.

A total 59% of the skiers, as shown by Table 29, do not support paying a user fee for the backcountry. The reluctance by skiers to support user fees for the backcountry is partially explained by the finding that nearly one out of every six skiers who was not supportive of such user fees did not even venture into the backcountry. A large portion of the skiers, 46% (or 77% of all the skiers not supportive), did not support the idea for any given reason. A possible explanation may be that skiers share the belief, held by many recreationists, that public lands should be accessible and available to all with only specific restrictions necessary to protect the natural and cultural resources. Since this may not include special services, skiers oppose user fees. In fact, some skiers who did support the implementation of fees, would only do so depending on what sort of facilities or services were provided.

TABLE 29

WILLINGNESS TO PAY A USER FEE FOR THE BACKCOUNTRY

	WILLINGNESS	
	FREQUENCY (Percent)	
COMMENTS	YES	NO
Park Sticker	19 (10.3)	
Don't go into Backcountry		15 (8.2)
Depends on Facilities/ Services Provided	15 (8.2)	
Other	16 (8.7)	10 (5.4)
No Response	25 (13.6)	84 (45.7)
TOTALS	75 (40.8)	109 (59.2)

Pet Policy

It is the park's current policy to allow pets (specifically dogs) in the park. This policy is seen by skiers as a major problem area. Table 30 shows that the majority of skiers, nearly 70%, do not advocate continuation of allowing pets, specifically dogs, in the Park. This percentage is, however, somewhat misleading. Of those skiers not supporting the Pet Policy, over one third (36%) or 23.9% of all respondents felt that dogs should only be kept off the trails and not out of the Park. In addition, not only did the majority of respondents (180) not own dogs, but nearly 15% of the respondents felt the policy should remain in effect if the leash regulation is enforced.

The presence of dog faeces on the trails was viewed as most objectionable. Skiers were also less enthusiastic about dogs on the trails because of damage done to the track-set trails by dog paws. Many skiers feel that dogs on ski trails, with or without a leash, present a potential hazard to themselves as well as to skiers. The researcher observed several instances where skiers were forced to abruptly end their ski run so as to avert injury to either themselves or the dog.

TABLE 30

CONTINUED PARK'S PET POLICY

COMMENTS	RESPONSE FREQUENCY YES	(PERCENT) NO
Should be kept off trails	3 (1.6)	44 (23.9)
If Leash Regulation Enforced	27 (14.7)	2 (1.1)
No Response	31 (16.9)	77 (41.8)
TOTALS	61 (33.2)	123 (66.8)

Findings seem to suggest that if certain management options are implemented and/or enforced, more skiers would most likely support, than oppose, the Park's Pet Policy. Although the continuation or changing of the Pet Policy has no easy solution, management might consider zoning certain trails, loops or areas for use by skiers and thier dogs. In lieu of a ban on pets within the Park, zoning should be considered as a viable alternative. This would serve to reduce potential conflicts and allow skiers who enjoy skiing with their dogs the opportunity to do so. It would be advantageous to management to gain further input from the skiers on this issue (both dog owners and non-dog owners) before making any changes to the Pet Policy.

Interpretive Programs

Skiers' receptiveness to personalized interpretive services such as guided ski trips, naturalist talks and interpretive events was determined by asking respondents if they were interested in interpretive programs on cross-country ski trails. Table 31 shows the preferences expressed by the respondents in the sample. Over half (51%) of the skiers were not interested in interpretive programming. A quarter of the sample would probably participate, while approximately 10% of the skiers would participate only once. The partial lack of interest in

TABLE 31

INTEREST IN INTERPRETIVE PROGRAMS

COMMENTS	RESPONSE FREQUENCY (PERCENT) YES	NO
Occasionally	6 (3.3)	
Backcountry	11 (6.0)	
Match Skiing Ability	4 (2.2)	
Try Once	15 (8.2)	
Other	8 (4.2)	9 (4.9)
No Response	46 (25)	85 (46.2)
TOTALS	90 (48.9)	94 (51.1)

interpretive programming on ski trails may be attributed to some aspect of the context in which a person participates in skiing. Some skiers (N=6), for example, voiced a concern about skiers attending an interpretive program on skies with differing levels of skiing expertise. This illustrates the problem of trying to set a pace, so as to not create large gaps in the group. As a result, some skiers may become impatient. Yet other skiers may, for the most part, seem less interested in services which they perceive as infringing upon their skiing. Nearly half of the respondents (48%) expressed an interest in personalized interpretive services, although less than one in four would be repeat participants. Findings suggest that these skiers are most likely to be families (25.5% or 47% of all respondents), or friends (51% or 47% of all respondents), the majority over 30 years of age (62%) and using the trails within the park proper (87% or 50% of all respondents) of all the beginner skiers in the study (N=16), 75% of them were interested in interpretive services. Only about half of the intermediate (48%) and advanced (44%) skiers in the study expressed the same interest. These skiers are also just as likely probable to be either male or female.

Non-personal services such as signs, brochures, and booklets may receive a greater acceptance by skiers. These services allow skiers to receive interpretive messages which they can either read on their own time, outside the activity, or enjoy while skiing.

Skier Subgroup Differences

Different preferences in regard to environmental characteristics and facilities and services may be associated to differences in skier characteristics. The provision of such user information could possibly assist managers in decision making. The following research question was formulated to identify such information:

1) Which skier characteristics may be used to predict differences in preferences for environmental characteristics and facilities and services.

Skiers were compared by the following characteristics: 1) skiing ability; 2) years skied; 3) area chosen; 4) group type; 5) group size; 6) education; 7) occupation; and 8) sex.

To determine if the means of importance ratings by skier characteristics on preferences for environmental characteristics and facilities and services (or setting clusters) are statistically different from one another. The Eta^2 value had to be $\geq$ 0.05. A one-way analysis of variance was performed to test if the relationships were significant at the .05 level of significance.

There were not significant differences on any of the setting clusters when skiers were compared on the basis of: 1) years skied; 2) group size; 3) education; 4) occupation; and 5) sex.

Tables 32-34 show the results of the statistical analysis. The findings identify those setting clusters to which skier subgroups did differ. Eta^2 values are in the range of .05-.09, which indicates that 5%-9% of the variability in that preference is explained by subgroup association.

Table 32 shows several associations between skiing ability and preferences for terrain variety, access, and skier safety. Beginner skiers consider terrain variety, specifically terrain that climbs and descends, as being of low importance. This suggests that novice skiers are less confident about their skiing ability and seek level terrain in which they can develop their techniques of skiing. Access to more challenging areas, such as in the backcountry, may not be regarded as important by beginning skiers. Their skiing needs are apparently met in a set-track environment. Parking lots and staging areas are viewed as important by all levels of skiers. A concern of many beginner skiers is skier safety. Skier safety, which might include emergency phones, patrols on the trails, and first-aid stations was rated more important by beginning skiers than by intermediate or advanced skiers. Beginner skiers may prefer some supervision and assistance by park employees. A nordic volunteer patrol unit may be an acceptable alternative in areas which are not part of any federal or provincial park type setting.

TABLE 32

PREFERENCES FOR SETTING CLUSTERS BY SKIING ABILITY

	SUBSAMPLE SCORES			ANOVA TESTS		
CLUSTER	SKIING ABILITY	MEAN	STANDARD DEVIATION	ETA^2	F RATIO	F PROBABILITY
Terrain Variety	Beginner	.3125	.8474	.06	6.117	.0027
	Intermediate	.8643	.5169			
	Advanced	.7758	.6481			
Access	Beginner	.0000	.0000	.06	5.457	.0050
	Intermediate	.4027	.6191			
	Advanced	.5727	.6900			
Skier Safety	Beginner	.2292	.5123	.05	4.506	.0123
	Intermediate	.0501	.1680			
	Advanced	.0545	.2004			

Advanced skiers, in contrast, expressed that access to a greater range of skiing opportunities was of importance. They may also have less need of supervision. Findings suggest that they are also more likely to be enthusiastic about terrain which has greater topographical variety. This would seem to indicate that as skiers become more skillful they seek greater diversity and challenge.

Table 33 shows the difference between area chosen and importance of development level and character. Skiers selecting backcountry destinations value areas which have few facilities, or none, more highly than did skiers using the park proper. These findings suggest that the area chosen by a skier may indicate the particular type of skiing experience sought. A skier in the backcountry, for example, may require a pristine recreational setting while one using an intensive recreation area may need or be more inclined to support convenience facilities and services. The majority of skiers (83%) using the set-track trail system felt the facilities and services were adequate and appropriate; however, they did not encourage further development. Although these skiers support physical developments, 60% (N=95) expressed a concern about acceptable limits beyond which skier satisfaction may be reduced. Skiers in general shared a negative attitude towards overdevelopment.

TABLE 33

PREFERENCE FOR DEVELOPMENT LEVEL AND CHARACTER BY AREA CHOSEN

	SUBSAMPLE SCORES			ANOVA TESTS		
CLUSTER	AREA CHOSEN	MEAN	STANDARD DEVIATION	ETA^2	F RATIO	F PROBABILITY
Development Level and Character	Park Proper	.4925	.5101	.09	18.360	.0000
	Backcountry	.0805	.1922			

In addition, Table 34 shows that family groups and couples rate the importance of facilities and services more highly than do solitary skiers and friends. This makes intuitive sense, especially since families with children (assuming children have inherently special needs) may require more support facilities and services than any other type of group. Not surprisingly, for example, family groups are concerned about trail slope. They are less enthusiastic about steep slopes and would prefer nearly level or moderate trail slope more strongly than do other types of groups. This may well be a reflection of a parent's interest in their childrens' safety with respect to skiing ability and trail design.

Considering the comparisons made within the different subgroups and those which were not significant, skiing ability seems to be the most managerially relevant of all. It should be noted that the present study not only examined user characteristics as separate variables, but more importantly, setting clusters were rated by varying numbers of individuals. As a result, a setting cluster which was rated by a low number of respondents may contribute to findings of no statistical significance. Despite single-variate analysis, however, the overall findings suggest continued research of skier preferences and characteristics is warranted. Managerially significant differences might result if some variables are considered simultaneously such as in multivariate analysis.

TABLE 34

PREFERENCES FOR SETTING CLUSTERS BY GROUP TYPE

	SUBSAMPLE SCORES			ANOVA TESTS		
CLUSTER	GROUP TYPE	MEAN	STANDARD DEVIATION	ETA²	F RATIO	F PROBABILITY
Development Level and Character	Alone	.5072	.5493	.07	4.231	.0167
	Friends	.4089	.4918			
	Family and Friends	1.0667	.4944			
Slope	Alone	.0580	.3122	.06	3.602	.0302
	Friends	-.1615	.4766			
	Family and Friends	-.4667	.5055			

Social-Psychological Carrying Capacity

Due to the volume of information and opinions about the notion of social carrying capacity, the following brief introduction will serve as a compendium of this study's results and relationship to concerns about carrying capacity.

Social carrying capacity is one of the more controversial topics in the study of leisure and recreation. This issue, more than any other, has been approached from the context of social science theories in an attempt to illustrate its applications to recreation situations in the outdoors.

The implementation of social carrying capacity involves both descriptive and evaluative components (Shelby and Heberlein 1984; Graefe et al. 1984). The following is from their research: The description component identifies management parameters (items such as use levels; types of use or site factors which can be manipulated by managers and measured) and impact parameters (outcomes associated with different amounts and kinds of use). In brief, the descriptive component informs how a selected recreation system works. The evaluative component, however, indicates how an area might be managed in terms of different objectives and their relative merits.

Shelby and Heberlein (1984) suggest that for the successful implementation of management parameters, the evaluation of the following three conditions are necessary in establishing social carrying capacity.

> "1) There must be a known relationship between use level or other management parameters and experience parameters.
> 2) There must be agreement among relevant groups about the type of recreation experience to be provided.
> 3) There must be agreement among the relevant groups about the appropriate levels of the experience parameters."

Such conditions require, to some extent, judgemental inputs for implementation. Management directives, alternate opportunities and user preferences assist in deciding what experience(s) should be provided. Relevant to this study is the definition of the types of experiences that should be emphasized in an area designated for cross-country skiing. To identify these experience expectations, the following research question was formulated:

> Why do people cross-country ski? What social-psychological experiences do skiers expect and desire to experience?

Experience Expectations

Table 35 illustrates individual components of skier expectations for experiences. Responses were segmented into clusters, according to underlying dimensions common to each item. Results are shown in Table 36. The relative importance of each dimension, as indicated by the overall cluster mean, is also depicted in a rank order.

TABLE 35

INDIVIDUAL COMPONENTS OF SKIER EXPECTATIONS FOR EXPERIENCES BY IMPORTANCE RATING OF SKIERS

CLUSTER		EFFECT ON SKIER ENJOYMENT (Percent)						
		MOST	MODERATE	LEAST	NEUTRAL	TOTAL	ITEM MEAN	STANDARD DEVIATION
Stress Release/ Solitude	Experiencing Solitude	4.3	6.0	1.1	88.6	11.4	.261	.759
	Experiencing the Tranquility	3.8	6.0	3.8	86.4	13.6	.272	.741
	Escape/Forget Pressures of Daily Work	2.2	1.1	1.6	95.1	4.9	.103	.496
	Getting Away from the Noise at Home	0	0	.5	99.5	.5	.005	.074
	Getting Away from Other People	6.5	5.4	6.5	81.5	18.5	.370	.859
	Relaxing Physically	2.7	2.7	3.3	91.3	8.7	.169	.600
	Experiencing the Open Space/Outdoors	19.6	11.4	3.8	65.2	34.8	.853	1.239
	Change from Daily Routine	0	1.6	2.2	96.2	3.8	.054	.291
Social Contact	Meeting New People	0	1.1	3.3	95.7	4.3	.054	.271
	Being with and Observing Other People	.5	.5	1.6	97.3	2.7	.044	.293
	To be with My Friends	.5	3.3	4.9	91.3	8.7	.130	.461
	Doing Something Together as a Family	0	2.7	.5	96.7	3.3	.060	.333
	To do Things with Other People	.5	0	1.6	97.8	2.2	.033	.254
Naturalism	Viewing the Scenery	15.8	19.6	6.0	58.7	41.3	.924	1.190
	Enjoying the Sights, Sounds and Smells of Nature	13.6	7.1	8.2	71.2	28.8	.630	1.094
	Viewing Wildlife	.5	.5	1.1	97.8	2.2	.038	.284
	Photography	0	0	2.2	97.8	2.2	.022	.146
Action/ Excitement	To Have Fun	0	.5	3.8	95.7	4.3	.049	.240
	To Enjoy the Excitement	1.1	.5	2.7	95.7	4.3	.071	.378
	Experiencing Action	0	0	2.7	97.3	2.7	.027	.163
Physical Activity/ Achievement	Exercising	17.4	20.1	15.2	47.3	52.7	1.076	1.171
	In Charge of a Situation	1.1	2.7	2.7	93.5	6.5	.114	.471
	For a Challenge	2.7	3.3	2.2	91.8	8.2	.169	.609
	Excitement in the Risks Taken	1.1	1.1	.5	97.3	2.7	.060	.379
	Becoming Better at Skiing and to Develop Skills	3.8	1.1	3.3	91.8	8.2	.169	.626
Self Awareness	Being on My Own	0	.5	1.6	97.8	2.2	.027	.194
	Sense of Well Being	2.2	.5	1.6	95.7	4.3	.092	.476
No Response	No Response	0	.5	11.4	88.6	11.4	.114	.319

TABLE 36

DIMENSIONS OF SKIER EXPECTIONS FOR EXPERIENCE CLUSTERS BY IMPORTANCE RATING

	CLUSTER ANALYSIS		
DIMENSTION	MEAN	STANDARD DEVIATION	VALUE LABEL
Naturalism	.404	1.489	Adds Strongly
Physical Activity/ Achievement	.317	1.380	Adds Strongly
Stress Release/ Solitude	.261	1.657	Adds Moderately
Social Contact	.064	.686	Adds Slightly
Self Awareness	.060	.530	Adds Slightly
Action/Excitement	.049	.462	Adds Slightly

The opportunities for: 1) naturalism; 2) physical activity/achievement; 3) stress release/solitude; 4) social contact; 5) self awareness and 6) action/excitement are perceived experiences sought by skiers in varying degrees.

Naturalism was rated as the most important experience expectation or reason for taking up nordic skiing. This finding not only suggests that the appreciation of nature, as an intrinsic motivation, is important but that the environment in which the activity takes place is also of prime concern. The physical properties of the activity, as well as the perceived physical and psychological benefits that one gains from exercise, have a positive effect on skier satisfaction. An opportunity to release stress and experience solitude are also viewed as important items by skiers. The cluster means for social contact, self awareness and action/excitement are low in comparison to the other dimension means and may be considered to add only slightly to skier satisfaction. Hass et al. (1980) and Marshall (1980) also identified experiences sought by skiers. The clusters most important to skiers have dimensions almost identical to the experience expectations identified in the present study. Several important findings are yielded from this study.

First, most skiers participate in nordic skiing to satisfy several expectations. These may range from intrinsic versus extrinsic motivations to experiences which are psychological in essence. In this study, the most important experiences sought by skiers appear to be opportunities for: 1) naturalism; 2) physical activity (exercise)/achievement and 3) stress release/solitude. Second; although findings from other studies, including the present study, suggest certain experience expectations are associated with nordic skiing, considerable variation as to the importance of each expectation may be found among skiers using the same environment or even within a given individual at different times.

Gathering information, or evaluative standards, from skiers on their preferences for certain experiences could assist managers to explicitly state the types of experiences that ought to be provided in terms of environmental and social conditions.

Impacts on Experience Expectations

To determine what factors, if any, had a negative impact on skier experience expectations, the survey asked: "Could you tell me three things that bother you when you are cross-country skiing?" (See Appendix A, Question 9B). Table 37 presents the individual components of social and natural impacts which lead to the perceptual response of being bothered as expressed by skiers in varying degrees. In other

TABLE 37

INDIVIDUAL COMPONENTS OF ITEMS WHICH BOTHER SKIERS AND AFFECT EXPERIENCE EXPECTATIONS BY IMPORTANCE RATING OF SKIERS

		IMPORTANCE (PERCENT)						
	CLUSTER AND ITEMS (NO.)	MOST	MODERATE	LEAST	NEUTRAL	TOTAL	ITEM MEAN	STANDARD DEVIATION
	BEHAVIOR *							
(1)	Lack of Trail Etiquette	36.4	19.0	9.8	34.8	65.2	-1.57	1.30
	DENSITY *							
(2)	Presence of More than a Few Other Skiers	13.6	6.5	7.6	72.3	27.7	-0.61	1.09
	INTRA-ACTIVITY DIFFERENCES							
(3)	Racers	1.1	.5	1.1	97.3	2.7	-0.5	.36
(4)	Skiers with Status Gear	.5	1.6	.5	97.3	2.7	-0.5	.34
	PERSONAL CONCERNS							
(5)	Disquietude About Skiing Ability	3.8	2.2	2.7	91.3	8.7	-.19	.65
(6)	Over Exertion	1.6	1.1	1.6	95.7	4.3	-.09	.45
(7)	Getting Lost	.5	.5	0	98.9	1.1	-.03	.27
(8)	Equipment Problems	3.8	2.7	1.6	91.8	8.2	-.19	.66
	NATURE *							
(9)	Avalanches, Poor Weather	1.6	2.2	2.2	94.0	6	-.11	.49
	DOGS ON TRAILS							
(10)	Dogs on Trails	10.3	12.0	4.9	72.8	7.2	-.60	1.05
(11)	Dog Droppings	1.6	3.3	2.2	92.9	7.1	-.14	.53
(12)	No Leash	2.7	4.3	1.1	91.8	8.2	-.18	.63
	LITTER *							
(13)	Litter	12.0	14.7	9.2	64.1	5.9	-.75	1.10
	TRAILS							
(14)	Trail Condition	3.3	8.7	3.8	84.2	5.8	-.31	.77
(15)	Signing Inadequate, Poorly Marked	1.1	.5	.5	97.8	2.2	-.05	.35
(16)	Snowmobile Tracks on Trail	2.2	1.6	1.1	95.1	4.9	-.11	.51
	No Response	3.8	18.5	50	49.5	72.3	-.51	.51

*Single Item Cluster

words, those items which seem to affect a skier's experience. The findings shown in Table 38 indicate the importance of several dimensions and are listed in rank order. The higher the cluster mean, the greater the importance as given by skier responses.

More than one half of the respondents, 65.2%, felt the behavior of other individuals (lack of trail etiquette) reduced their enjoyment or interfered with desired experiences. The degree to which the behavior of other skiers is perceived as bothersome may depend on the nature and importance of the experience being obstructed. If, for example, a skier places a high importance for social contact, the behavior of skiers may be more important than if the same experience were of less or no importance. The evidence of other skiers (e.g., litter) was viewed as objectionable by nearly one-third of the respondents. Although there was almost no litter in the study area, responses indicate that the idea of litter has a negative effect on skier experiences. Skiers did not respond to the actual presence of litter and, therefore, this factor may be considered an ecumenical finding. Both lack of trail etiquette and littering are types of behavior which are frequently associated with feelings of negative experiences.

Skiers also reported that density, to a lesser degree, decreased skier satisfaction. This finding is consistent with that of Stankey and McCool (1984). Their literature review revealed a generally low level of statistical association between use levels and satisfaction. This association is explored further in the section on crowding.

TABLE 38

DIMENSIONS OF ITEMS WHICH AFFECT SKIER EXPERIENCES BY IMPORTANCE RATING

	CLUSTER ANALYSIS		
DIMENSION	MEAN	STANDARD DEVIATION	VALUE LABEL
Behavior	-1.57	1.30	Detracts Most
Litter	-.75	1.10	
Density	-.61	1.10	
Dogs on Trail	-.30	1.27	
Trails	-.16	.94	
Personal Concerns	-.12	1.09	
Nature	-.11	.49	
Intra-Activity Differences	-.05	.49	Detracts Least

Several dimensions, although of low importance in affecting experiences, are interesting to note. Asymmetrical antipathy or intra activity conflict exists between some skiers and skiers with dogs. Comments made by several skiers as to dogs on the trail, dog feces, and unleased dogs suggests there is a certain antagonism amongst these skiers. Some skiers also mentioned that racers and skiers wearing "status gear" bothered them. These intra activity conflicts may be the result of contrasting personal norms of skiers (Jacob and Schreyer 1980).

Skier rated nature (avalanches, weather) and trails (trail condition, poorly marked, snow mobile tracks) as slightly detracting from a quality skiing experience. Comments that some skiers made about their disquietude of skiing ability suggest these skiers are sensitive to what others might think of them. This occurs to the extent that it has a negative affect on their skiing experience.

How and if a skier responds to a given conflict, human impact, or crowding (sources such as behavior and density which may reduce user satisfaction or affect the quality of the skier experience) depend on the skier's experience expectations and norms. Further research is required to determine not only what factors diminish a skier's overall experience, but also the specific experiences that are affected. This, however, is beyond the scope of the present study.

Management Practices/Quality Skiing Experience

Skiers were asked what management practices or actions they would suggest be improved upon, in an attempt to enhance their skiing experience. Table 39 shows the results. The majority of skiers, approximately 77%, gave at least one item which could be changed or added so as to increase skier satisfaction. Respondents either gave a site-specific recommendation or suggested future policies for the ski area.

Findings are quite homogenous in that no single item was viewed, by a large number of skiers, as being of a major concern. The one exception, perhaps, is the recommendation that the groomed trail system be expanded. This was indicated by 20% of the sample. The important point of the findings is that responses given indicate various management practices which might influence a skier's enjoyment. The present study found the following actions would increase skier satisfaction: 1) improve access; 2) expand use; 3) improve signage; 4) restrict use; 5) develop specific facilities, and 6) expand or improve informational sources.

Backcountry skier comments indicate a preference for the following: 1) increasing the access to the backcountry; 2) keeping the Smith Dorrien Highway open; 3) more off-trail areas; 4) a series of backcountry huts and shelters, and 5) a backcountry trail guide. This

TABLE 39

MANAGEMENT PRACTICES WHICH COULD IMPROVE UPON SKIER EXPERIENCE EXPECTATIONS

MANAGEMENT CLUSTER AND ITEMS (NO.)	FREQUENCY	PERCENT
IMPROVE ACCESS		
(1) Keep Smith Dorrien Highway Open	19	10.3
(2) Increase Access to Backcountry	11	6
EXPAND USE		
(3) More Off Trail Areas	19	10.3
(4) More Destination Trails	16	8.6
(5) Expand Groomed Trail System	37	20
TRAIL SIGNING		
(6) More Trail Signs	8	4.4
(7) Standardize Trail Symbols	6	3.2
(8) Flagging in Backcountry Areas	3	1.6
RESTRICT USE		
(9) One Way Trails	7	3.8
(10) Use Limits on Heavily Used Areas	12	6.6
(11) No Dogs on Trails	18	9.7
FACILITIES		
(12) Overnight Accomodation	8	4.3
(13) Series of Backcountry Huts	17	9.2
(14) Benches Along Trails	23	12.5
(15) Washrooms Along Trails	20	10.8
INFORMATION		
(16) Backcountry Trail Guide	8	4.4
(17) Educate Skiers on Trail Etiquette	17	9.2
(18) Enforce Regulations	5	2.7
(19) Telephone Recording of Cross-Country Ski Conditions	14	7.6
No Response	40	21.7
Don't Know	2	1.1

makes intuitive sense since the items mentioned are assocated with backcountry settings. In contrast, track-set trail user comments suggest a preference for an expanded, well developed trail system, educating skiers on trail etiquette and the installation of such structures as outhouses, trail signs and benches. Both backcountry and set-trail user comments reflect skier concerns regarding trails or route skied in relation to skier satisfaction. It appears that these items are basic prerequisites to the enjoyment of skiing.

The overall low percentage values suggest, although some minor variations occur, that there is a consensus amongst skiers as to their evaluation of prefered management practices in the park. It would seem apparent that the majority of skiers are satisfied with the planning and management of the park.

Annoyance/Appreciated Attributes

In addition to evaluating skier experiences, there were a number of factors associated with respondents that either reduced or enhanced the enjoyment of other peoples' ski trip. Skiers were also asked to state the importance of such factors. The item and cluster means are shown in Tables 40 and 41. Relative importance is indicated by the overall cluster mean.

TABLE 40

APPRECIATED ATTRIBUTES OF SKIERS BY IMPORTANCE RATING

APPRECIATED CLUSTER (SINGLE ITEM)	EXPRESSED APPRECIATION (PERCENT)					CLUSTER ANALYSIS	
	MOST	MODERATE	LEAST	TOTAL	NEUTRAL	MEAN	STANDARD DEVIATION
Demonstrate Trail Etiquette	61.4	14.1	3.8	79.3	20.7	2.16	1.21
Sociable	16.8	31.5	7.6	56	44.0	1.21	1.18
Don't Litter	14.1	13.6	7.6	35.3	64.7	.77	1.14
Keep Dogs Off Trails	1.1	12.5	7.1	20.7	79.3	.35	.74
Willing to Help	3.3	7.1	8.7	19	81.0	.33	.75
Informative	.5	6.0	6.0	12.5	87.5	.20	.56
Casual Atmosphere	2.7	4.3	2.7	9.8	90.2	.20	.64
No Response	0	10.9	56.5	67.4	80	.57	.50

TABLE 41

ANNOYANCE ATTRIBUTES OF SKIERS BY IMPORTANCE RATING

ANNOYANCE CLUSTER AND ITEMS (NO.)	EXPRESSED ANNOYANCE (PERCENT)					ITEM-CLUSTER ANALYSIS			
	MOST	MODERATELY	LEAST	TOTAL	NEUTRAL	ITEM MEAN	CLUSTER MEAN	STANDARD DEVIATION ITEM	STANDARD DEVIATION CLUSTER
Lack of Trail Etiquette *	46.7	17.4	3.8	67.9	32.1	-1.79	-1.79	1.32	1.32
Litter *	20.7	16.3	4.9	41.9	58.2	-.995	-.995	1.26	1.26
Unleashed Dogs *	12.5	17.9	5.4	35.9	64.1	-.79	-.79	1.13	1.13
Image Role *	1.6	2.7	2.2	6.5	93.5	-.13	-.13	.51	.51
DIFFERENT VALUES									
(5) Towards Nature, Wilderness	3.3	4.9	1.1	9.2	90.8	-.207	-.111	.68	.693
(6) Vandalism of Facilities	0	.5	.5	1.0	98.9	-.016		.16	
INTRA ACTIVITY DIFFERENCES									
(7) Annoyance Towards Skiers of Lesser Ability	1.1	2.2	3.3	6.6	93.5	-.109	-.086	.46	.821
(8) Disquietude Towards More Advanced Skiers	.5	1.1	.5	2.1	97.8	-.043		.31	
(9) Racers Who Think They Own the Track	2.7	2.2	.5	5.4	94.6	-.130		.57	
(10) Drinking/Rowdyism	1.1	.5	1.6	3.2	96.7	-.060		.37	
INTER ACTIVITY CONFLICTS									
(11) Showmobilers	0	.5	0	.5	99.5	-.011	-.018	.15	.373
(12) Snowshoers	.5	.5	0	1.0	98.9	-.027		.27	
(13) Baby Sleds	.5	0	0	.5	99.5	-.016		.22	
No Response	8.7	33.2	76.1		23.4	-.772	-.772	.43	.43

* Single Item Clusters

Skiers were uniformly concerned about trail etiquette of others, while they were skiing. Eighty percent of the respondents expressed that skiers demonstrating common trail courtesy would add to their skiing enjoyment. If the opposite were evident, nearly 70% felt it would detract from a quality skiing experience. The importance that skiers associated with trail etiquette may reflect skiers' sensitivity towards user behavior. Managers ought to make a concerted effort to educate skiers on trail etiquette so as to reduce conflicts.

Controversy also arose over the subjects of dogs and litter on trails. The control and abuse of such factors are perceived as either positive or negative, respecitvely. Many skiers, for example, are annoyed with users who do not control their pets while skiing. Comments about dogs suggests they should either be not allowed on the trails or kept under control. This situation requires management action since many skiers are vehemently opposed to dogs on the ski trails. Skiers carrying out litter or not littering are viewed as displaying desirable qualities. Conversely, users who litter were regarded as exhibiting negative behavior and as such, reduced the enjoyment for others.

The items 1) socialable, 2) willing to help, 3) informative and 4) casual atmosphere are attributes, describing potential skier interactions, which are generally favoured by users. Results indicate that encountering skiers may not detract from the quality of an individual's experience if the contact occurs between skiers displaying the aforementioned attributes. In contrast, several skiers felt that the skiing ability of others, as well as differing behavioral norms and image roles would detract from a quality skiing experience.

These intra-activity differences should be sufficiently defined to be of assistance in management decisions. Information on skier profiles, including skiers' perceptions of one another, can make managers aware of modifications that will have a positive affect on user satisfaction.

Crowding

Crowding is the negative evaluation of a specific density where an individual's satisfaction or enjoyment is somehow reduced (Stokols, 1972). It is a subjective value judgement, concerning the presence of other people. To identify relationships between reported/hypothetical user density, perceived crowding and satisfaction with the experience the issue was formulated in the following way:

> What role does reported and hypothetical encounter levels play in determining the skier's perceptions of crowding?

Reported Contacts

Each skier was asked what affect the number of people they saw had on their skiing experience. A three point (negative -1, indifference 0, positive +1) response format was used. The term "crowded" was avoided since this researcher felt that it could be interpreted by skiers to mean either density in the area or their reaction to that density. Avoiding the use of the term crowding incorporates both the positive and negative reactions to a perceived density level. Such a response format would allow for a complete set of responses consistent with Stokols (1972) definition of crowding. The relationship between reported encounter levels and skier satisfaction are shown in Table 42.

Results indicate that although 19% of the 184 skiers were affected by reported encounter levels (i.e., reduced enjoyment), most felt only a slight reduction in overall enjoyment. Over half (64%) felt that their skiing experience was unaffected by the other skiers, while the remaining 17% indicated positive enjoyment. The value of 24.6, was the average number of skiers that respondents encountered during their skiing trip. It is apparent from these findings that increasing visitor densities do not necessarily lead to a reduction in the quality of the user's experience. Also, density levels can be evaluated either positively or negatively. To further investigate the correlation between

TABLE 42

RELATIONSHIP BETWEEN REPORTED ENCOUNTER LEVELS AND SKIER SATISFACTION

REPORTED ENCOUNTER LEVELS	REACTION FREQUENCY (PERCENT) POSITIVE	NEGATIVE	INDIFFERENCE	INDIVIDUAL TOTALS
< 10	16 (8.7)	2 (1.1)	28 (15.2)	46 (25)
10-20	4 (2.2)	5 (2.7)	31 (16.9)	40 (21.8)
21-30	5 (2.7)	12 (6.5)	26 (14.1)	43 (23.3)
31-40	3 (1.6)	6 (3.3)	10 (5.4)	19 (10.3)
41-50	1 (.5)	5 (2.7)	15 (8.2)	21 (11.4)
51-60	0 (0)	1 (.5)	4 (2.2)	5 (2.7)
61-70	0 (0)	0 (0)	2 (1.1)	2 (1.1)
71-80	0 (0)	0 (0)	1 (.5)	1 (.5)
81-90	0 (0)	1 (.5)	0 (0)	1 (.5)
> 90	2 (1.1)	3 (1.6)	0 (0)	5 (2.7)
No Response	0 (0)	0 (0)	1 (.5)	1 (.5)
TOTALS	31 (16.8)	35 (19.0)	118 (64.1)	184 (100)

density and satisfaction, the following research question was derived at:

Is there a linear relationship between reported contacts and satisfaction?

Previous empirical research (Stankey 1973; Manning and Ciali 1980) suggests that satisfaction declines as use levels increase through a straight line relation. The relationship between reported contacts and satisfaction was tested using Pearson Product-moment correlation coefficient. Skier estimates of reported contacts are shown in Table 43. These may not be as accurate as those provided by trained observers (Shelby and Colvin 1982), however, various studies suggest that it is the user's perceptions of the trip and not the researcher's which are critical determinants of quality recreation experiences. Each respondent was asked to report the number of skiers they had observed and relate an overall level of satisfaction (positive, negative, indifference) for the skiing experience.

A Pearson r of -0.25075 was found between reported contacts and satisfaction. Only 6.3% of the total variation can be ascribed to the linearity relation. A value of r close to zero indicates that there is no clear, significant relationship between reported contacts and satisfaction (i.e., contacts increase, satisfaction decreases). This result is consistent with the findings of other studies of recreational crowding (Heberlein and Shelby 1977; Ditton et al. 1983; Graefe et al. 1984). None of the studies report a statistically significant association between satisfaction and density.

TABLE 43

SKIER ESTIMATES OF REPORTED CONTACTS

REPORTED CONTACTS	FREQUENCY	PERCENT
< 10	46	25
10-20	40	21.8
21-30	43	23.3
31-40	19	10.3
41-50	21	11.4
51-60	5	2.7
61-70	2	1.1
71-80	1	.5
81-90	1	.5
> 90	5	2.7
No Response	1	.5
TOTALS	184	100.0

In addition, skiers were asked if they had expected the encounter levels they observed. Nearly 75% of the respondents indicated they did (see Table 44). This suggests that skiers are well aware of the fact that they will be encountering others and yet this may not always be an undesirable epxerience. Naturally, such a normative acceptability of encounters varies amongst individual skiers and settings.

Hypothetical Contacts

When skiers were asked to indicate at what hypothetical encounter level their skiing experience diminished, the majority of skiers, 76%, did not respond (see Table 45). Such a finding casts doubt on the utility of density as a single measure of crowding. Although crowding perceptions are influenced by use densities, this relationship is mediated by a variety of other situational and subjective factors. It is apparent that more is involved in crowding than just density. In lieu of this, the following research question was formulated:

> What factors may influence the measure of crowding?

The findings shown in Table 46 depict additional factors which respondents felt influenced their crowding perceptions. These were obtained by asking respondents to explain "no response" when questioned on the issue of hypothetical encounter levels (see Question No. 22, Appendix A). The open-ended format was important for discerning, in a way which did not influence the respondent, specific bothersome factors.

TABLE 44

INQUIRY AS TO SKIERS' ANTICIPATING REPORTED CONTACT LEVELS

EXPECT REPORTED CONTACT LEVELS (RESPONSE)	FREQUENCY	PERCENT
Yes	137	74.5
No	44	23.9
No Response	3	1.6
TOTALS	184	100.0

TABLE 45

HYPOTHETICAL ENCOUNTER LEVELS BEFORE SKIING EXPERIENCE DIMINISHES

HYPOTHETICAL ENCOUNTER LEVEL	FREQUENCY	PERCENT
1	1	.5
5	1	.5
6	2	1.1
7	1	.5
8	1	.5
10	3	1.6
15	4	2.2
20	6	3.3
25	1	.5
30	4	2.2
35	1	.5
40	4	2.2
50	6	3.3
60	1	.5
75	1	.5
80	4	2.2
90	2	1.1
Don't Know	30	16.3
No Response	111	60.3
TOTALS	184	100.0

TABLE 46

FACTORS WHICH SKIERS FELT INFLUENCED THEIR CROWDING PERCEPTIONS

FACTORS	FREQUENCY	PERCENT
Behavior of Skiers	43	23.4
Constantly Encountering Skiers	29	15.8
Frequent Discontinuance of Skiing	21	11.4
Displacement (Time/Location)	18	9.8
Encounter Situation	16	8.7
Location of Encounter	13	7.1
Other	11	6.0
Size of Group	10	5.4
Skier Type	10	5.4
No Response	13	7.1
TOTALS	184	100.0

Slightly more than 20% of the respondents felt bothered, in some way, by the behavior of other skiers. Of those, lack of trail etiquette seemed to be the major factor in reduced enjoyment. This was perceived as negative behavior since it violated their cross-country skiing norms. In addition, several skiers indicated that observed behavioral standards which were dissimilar from their own, reduced the quality of their experience (e.g., littering). These findings suggest that a certain percentage of skiers are bothered, more so than others, by the behavior of individuals because of conflicting normative and personal standards. This objectionable behavior, in turn, influences their perception of crowding.

Perceptions of crowding also appears to be interrelated with encounter rates. Several skiers reported that constantly encountering other skiers, irrespective of the actual number of people, reduced their satisfaction and increased their perception of crowding. In addition, several skiers stated that such encounters interfered with their enjoyment because they had to constantly stop skiing for either safety reasons or to let other skiers pass.

Although previous research (Bultena et al. 1981; Shelby 1980) indicates that the number of users and the rate of contacts are positvely related, this researcher believes that the geographical features of a mountain environment and other variables such as trail length and design would serve to reduce the number of contacts between skiers and thereby curtail the negative impact associated with rising use levels.

The location of encounters was also viewed by several skiers as being an intervening variable in the perception of perceived crowding. These skiers indicated a greater tolerance for encounters near the trailhead or staging area than for encounters along the ski trails or near their specific destination. Most often skiers expected to see others at trailheads and access points and, as such, had no influence on their experience. Results of this study suggest, however, that once users began their ski trip different normative expectations and preferences may be used in the evaluation of acceptable encounter levels.

A few skiers indicated that they avoid areas of perceived crowding by changing their use patterns in terms of time of skiing as well as selection of an area. Several strategies were used by skiers to avoid encounters. These included skiers starting early, skiing weekdays, staying on trails for long durations, selecting difficult trails and less popular areas. These findings suggest that individuals may take certain measures to avoid areas where crowding conditions exceed their tolerances. Such displacement is an example of individuals making a behavioral adjustment (e.g., starting early) because of potential conditions perceived as being unfavourable.

Other variables which influenced skiers' perception of crowding included skier type and group size. Several respondents mentioned that the type of skier encountered had a significant effect on expressed preferences for encounters. Skier types included dimensions related to skiing ability (e.g., continuum ranging from the beginner to advanced) equipment and setting preferences. This suggests that a given individual may be tolerant of contacts with one type of skier and very intolerant of contacts with another user type. Some skiers who were contacted in the backcountry, for example, prefered contacts with individuals of similar ability as opposed to meeting less experienced skiers.

In addition, group size was also found to be a "visible" variable of perceived similarity between different user types. Although large groups constitute a relatively small proportion of users in the Kananaskis, most skiers felt that seeing large groups reduced their perceived quality of the experience. This researcher suspects that these findings are the result of either large groups violating a small group social norm or that larger groups stand out as being inherently different.

The results of Question No. 22 (Appendix A) identified various factors influencing crowding. Further research is required to establish the combined effects of such variables. It is apparent that no single management strategy will satisfy the diverse, multidimensional aspirations found among skiers. By indicating those factors which are significant, however, managers are better prepared to make decisions which will have a positive affect on an individual's perception of crowding.

Control Measures

The following research question was formulated to assess the attitudes of cross-country skiers toward the idea of controlling the number of skiers using an area:

> Would cross-country skiers be supportive of visitor use level control measures?

As shown in Table 47, there is a clear opposition (68%) among skiers to the idea of control measures. Of particular interest is the finding that in the opinion of 21% of the skiers, use levels were too low to warrant control measures. An additional 31% opposed strategies to control use but gave no reasons why. Comments made by respondents and this researcher's intuition suggest several reasons why skiers predominantly do not support control measures. They are as follows:

> 1) Control measures may be perceived as authoritarian and restrictive, 2) skiers are unaware of strategies to control overuse, and 3) skiers' perception of crowding may not warrant controls.

The proportion of skiers supporting control measures was small (32%). Of these skiers, however, nearly 21% indicated a positive reaction towards manipulative controls. These controls allow managers to

TABLE 47

SKIERS' REACTION TO THE IDEA OF USE LEVEL CONTROL MEASURES

COMMENTS ABOUT CONTROL MEASURES	SUPPORT FREQUENCY (PERCENT)	
	YES	NO
If Resource Damage	4 (2.2)	3 (1.6)
Use Too Low to Warrant Control Measures	1 (.5)	38 (20.7)
Manipulative Techniques	38 (20.7)	0 (0)
Regulatory Controls	8 (4.3)	0 (0)
Interference With Freedom of Choice	0 (0)	12 (6.5)
Other	2 (1.1)	15 (8.2)
No Response	0 (0)	57 (30.9)
Don't Know	6 (3.3)	0 (0)
TOTALS	59 (32.1)	125 (67.9)

modify visitor use patterns by subtle and less obtrusive ways (e.g., information dispersal and trail design). In contrast, only a small percentage of skiers supported regulatory controls (e.g., policy enforcement and restrictions on use intensity).

Several findings may be drawn from the comments made by the respondents. First, excessive regulation and control will inevitably reduce the quality of the skiing experience. Second, managers should have a clear understanding of skier attitudes toward control measures. Third, the practicality or need of reducing the number of skiers in an area requires managers to obtain accurate information on user perceptions of crowding. This is important since what managers perceive as acceptable may be quite different from the users' perceptions.

As a final note, excessive manipulation may interfere with the spontaneity associated with cross-country skiing. Managers should first try to solve problems by disseminating information before imposing restrictions or increasing facilities.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Summary of Results

The popularity of cross-country skiing has increased greatly in the past decade. If managers are to provide users with satisfying recreational experiences and contrive a more substantive basis to guidelines for developing ski areas, an adequate data base is required.

The data base for this study came from an interview survey of 184 randomly selected skiers throughout Kananaskis Provincial Park. This study focused on 1) user characteristics, 2) preferences for a range of attributes, 3) social-psychological carrying capacity, satisfactions, and 4) perceptions of crowding. A synopsis of the findings, under appropriate headings, follows below. The research questions used in this study are reiterated so as to facilitate the elaboration of concluding statements.

User Characteristics

Who are the cross-country skiers who currently visit Kananaskis Provincial Park? What characteristics, and demographic traits describe them.

The "average" skier in the study was about 35 years old, likely well educated, involved in a professional occupation and who presently lives in a large urban center. A majority of the individuals are male, would rate themselves as intermediate nordic skiers, and have approximately 7 years of skiing experience. This skier is usually with family and friends comprising of 2-4 members. Most go for day trips on weekends and are adequately prepared for such outings. Ideal snow conditions, proximity and trail selection are ski area features most highly valued by skiers.

Skier Preferences

What are the preferences of cross-country skiers for environmental characteristics and management practices?

Data from this part of the study identifies some of the more important preferences of skiers.

Environmental Characteristics

Terrain which is scenic (aesthetics), natural, and has ample topographical variety are most highly favoured by skiers. Such terrain provides the planner opportunity for designing trails for a variety of users. Trails of moderate slope, wide, groomed and passing through a variety of vegetative types are generally desired by most skiers. The condition of trails, if perceived as not being favorable, detracts strongly from skier satisfaction. Trails along man-made features and hiking trails were slightly unpopular with skiers, as indicated by comments made by respondents.

Management Practices

The provision of warm-up/information facilities, trail amenities (e.g., benches), trail signs, trail grooming/setting, parking and staging areas are most preferred by skiers using the park proper. These features are less important to backcountry skiers who place a greater emphasis on access, breaking their own trails, and to a lesser extent, huts and bivouac shelters.

Backcountry skiers expressed negative feelings towards exuberant facilities and services which were deemed superfluous. This usually included restaurants, snackbars and convenience stores. Family groups, in particular, are more facility/services oriented than individuals and groups consisting of friends.

Supplementary Preferences

The most sought after kind of information by skiers was trail information. Maps, guidebooks, and the Visitor Center were of primary importance as sources. Information on weather and snow conditions was also important. The major sources for such information were the Visitor Center, Information Center (Travel Alberta) and phone-in service. Information used in selecting the Kananaskis area was obtained primarily from other skiers or friends and previous experiences. Information services within the park were viewed as being satisfactory.

Skiers' reaction to a user fee for groomed versus non-groomed trails suggests that they are willing to pay. Only, however, if certain conditions are met. It appears that if users are informed about what their money does and trail fees are minimal or incorporated in a park sticker, they are receptive to the idea of an individual's responsibility (i.e., sharing costs) for well managed trails. Skiers had the most negative feelings towards a user fee for the backcountry area. Skiers felt these areas should be free of charge since they were public lands and had no special services (at least none which were perceptible by the respondents).

The presence of dogs on the ski trails was quite unpopular with most skiers. Suggestions ranged from banning dogs from trails to enforcing the regulation that all pets be kept on a leash. Major areas of concern were encounters with dogs and skier safety as well as dogs ruining track-set trails. More skiers would most likely support the Parks' Pet Policy if management implemented certain zoning strategies, such as designating specific trails for skiers with dogs.

Interpretive programming on ski trails is not viewed as a high priority by most skiers. Those expressing an interest in personalized interpretive services are most likely to be over thiry years old, be families or friends, beginner skiers, and use the park proper trail network. Skiers, for the most part, prefer interpretation through off-site approaches such as trailhead signs, brochures and booklets.

Social-Psychological Experiences

Why do people cross-country ski? What social-psychological experiences do skiers expect and desire to experience.

Naturalism (e.g., appreciation of nature, being outdoors), physical activity/achievement, and stress release/solitude were perceived by skiers as important experience expectations. The high value placed on naturalism parallels the high rating given to the environmental characteristics of scenic, natural terrain and vegetative types. Ski areas should be managed to provide as natural an experience as possible. Social contact, self awareness, and action/excitement add slightly to satisfaction.

Things that decreased skier satisfaction were behavior (e.g., lack of trail etiquette), littering and to a lesser degree, density. Sources of management actions (specific to the park) which might enhance skier experiences include improving access, expanding use, and additional signage. These actions were, however, not viewed by the majority of skiers as problem areas. Skier trail etiquette, dogs and litter are the most important user related attributes influencing skier satisfaction.

Knowing which experience expectations are associated with nordic skiing should provide managers with the information they require to provide for such opportunities.

Crowding

What role does reported and hypothetical encounter levels play in determining skier's perceptions of crowding?

Findings suggest that the perception of crowding is a function of more than reported or hypothetical encounter levels. The majority of skiers, in fact, expected the encounter levels. Based on the number of skiers respondents encountered, most reported no reduction in enjoyment of their skiing experience.

Is there a linear relationship between reported contacts and satisfaction?

In investigating the relationship between skiers' reported contacts and satisfacton, the correlation coefficient was found to be weak (i.e., .25; not statistically significant). Findings do not link reported contacts to skier satisfaction in a simple linear fashion. That is to say, as reported contacts increase, so do negative evaluations of satisfaction. The inability to verify such a direct relationship and the investigation of other non-density dependent variables are discussed in the subsequent section.

What factors may influence the measure of crowding?

Findings suggest that skier satisfaction cannot be predicted from contact variables or use density alone. The relationship of crowding perceptions and use densities is mediated by the users multiple experience expectations and by a variety of other situational and subjective variables. Perceptions of crowding were found to be related to the following variables: 1) behavior of skiers, 2) constantly encountering skiers, 3) frequent discontinuance of skiing, 4) displacement (time/ location), 5) encounter situation, 6) location of encounter, 7) size of group, and 8) skier type. The following elaborates on several plausible factors contributing to perceptions of crowding in this study. Behavior (e.g., lack of trail etiquette and littering) that infringes on the norms of skier behavior was an important factor in several respondents' perception of crowding and reduced satisfaction. In fact, the objectionable behavior of other skiers was the factor that most affected users' skiing experience.

The rate of contacts and the resultant interaction (e.g., skiers having to stop skiing either for safety reasons or to constantly let other pass) also decreased skier satisfaction for a number of individuals.

The location of encounters had an impact on several skiers' perception of crowding. The skiers were more tolerant of encounters at trail heads and access points than near their destination or along the ski trails.

The type of skier encountered had an effect on expressed preferences for encounters. Perceived differences were based on skiing ability, equipment used and setting preferences (i.e., whether a skier skied in the backcountry or on set trails). Findings also suggest that advanced and/or backcountry skiers are less tolerant of beginner skiers and those inadequately prepared for winter conditions.

Small groups of skiers were preferred over large, even if the total number of skiers encounters was greater. In several instances, individuals would take certain measures to avoid areas of high density. This form of behavioral adjustment or displacement included such strategies as skiers starting early, skiing weekdays or selecting less popular areas.

Control Measures

Would cross-country skiers be supportive of visitor use level control measures?

For the most part, skiers do not support the idea of control measures. The use of manipulative controls over regulatory controls did, however, receive some support. Comments made by skiers suggests that "overuse" is not a problem in the park at present.

Implications and Recommendations For Management

This study attempts to provide managers with information in terms of concepts and principles about probable consequences of certain actions. In addition, aspects of the recreational environment which had an important influence on visitor satisfactions are identified. Information on user satisfactions can suggest guidelines for recreation management.

Findings of this study indicate several actions that may provide skiers with opportunities for satisfying experiences while maintaining the natural quality of the park.

1. Conflicts amongst skiers usually arose when skiers with contrasting standards of behavior (i.e., expectations, personal norms) interacted. One theme that was repeatedly mentioned by skiers as an area of prime concern was the lack of trail etiquette some skiers displayed. Efforts should be made to educate skiers of the appropriate norms of cross-country skiing. Trail maps and interpretation services

should be used to modify skier behavior. These subtle, less obtrusive ways of communicating trail etiquette would do most toward optimizing skier satisfaction. Trail maps currently used in the park are not very explicit in describing proper trail etiquette. An improvement in this area would certainly reduce future conflicts. A suitable example of a cross-country skiing trail etiquette publication is that used by Parks Canada (1981).

2. Inform skiers of encounter rates that can be expected at various sites throughout the ski area. Skier satisfaction is likely to be improved if actual conditions are more consistent with expectations. Most skiers favor indirect management using various media forms. Skier reactions to density suggests that restrictions or regulations are presently unnecessary and would surely reduce the quality of a skier's experience. Control measures, if any are used, should always be non authoritarian and indirect.

3. Conflicts occuring amongst skiers are often psychological in nature, such as skiers' perception of one anothers skiing ability. Before selecting an area or trail, skiers should be informed of the value of being aware of the following trail rating: 1) assessing their own skiing ability, 2) having a familiarity with the associated risks, and 3) recommended skiing ability (e.g., suggest beginner skiers avoid backcountry areas which require special skills and stamina).

This would serve to minimize the potential intra-activity conflicts in terms of the range of skier types.

4. Cross-country skiers surveyed indicated that an ideal trail would be one which is routed to include a variety of scenic vistas, vegetation types, topographical variety, and natural areas. Separate areas for cross-country skiing and snowshoe use should also be designated wherever possible. Track setting and trail grooming in the park proper should be continued. In addition, structures such as benches and outhouses should be provided for along key points of the trail network. Ample trail signage and distance markers along these trails are also preferred by skiers.

The survey reaffirms that trails in the backcountry should remain non-groomed. Information on these ski trails and access should be provided. Areas of concern for skiers include avalanches and trails that are near man-made features. Informing skiers of the avalanche hazard rating and separating trails from man-made features would enhance skier safety and satisfaction. Trails which follow summer hiking routes require appropriate improvements (e.g., sharp hazardous corners, extreme narrow section) to make them suitable for enjoyable ski routes. A tradeoff exists in planning for backcountry trails because, for some skiers, trail hazards may be part of the experience or challenge they seek. In many cases the only changes necessary may be minor modifications of trail alignments. Diversity of trails should, therefore, be the base of any management plan.

Feelings about dogs on trails is mixed. Reactions to 1) allowing dogs on certain trails only 2) no dogs on trails, and 3) educating dog owners of conflicts should be carefully monitored. Some restriction may be necessary. Zoning would most likely receive the greatest acceptance by skiers.

If management were considering to offset costs of trail maintenance by means of user fees, this would probably receive the greatest acceptance if the following were to be considered: 1) purchase of park entrance sticker, 2) minimal fee, and 3) if the public were informed why the need, where the funds were going and what skiers receive in return. Any such decision requires careful scrutiny on the part of management. Skiers supporting user fees for trail grooming are most likely to be park proper skiers, rather than backcountry skiers.

Additional trails branching off existing ones near parking lots or staging areas and joining the original trail at different points would serve to reduce congestion. One-way trails, to which skiers have reacted favorable, might also be used to minimize skier contacts and enhance dispersion. Connecting trails to campgrounds may encourage campers to leave their vehicles there. Campers could ski a number of trails without driving to parking areas.

5. Visitor responses from a majority of respondents indicated that facilities in cross-country ski areas should be unobtrusive with the natural environment. Suggestions from skiers regarding facilities include: 1) should be simple, rustic, yet functional, 2) primitive shelters along the longer trails, 3) none in the backcountry other than garbage/toilet facilities at trail heads, 4) improve the lighting in existing outhouses, 5) continue provision of information through visitor/information centers, and 6) expansion of parking lots (caution should be taken in expanding the size of parking lots; increasing the number of small lots or trails connecting existing lots that are not frequently used may be a better means of distributing skiers). Skiers selecting backcountry areas are less supportive of facilities and in most instances, prefer none. Those skiing in the park proper, particularly family groups, are more facility/services oriented but share with all users a negative attitude towards overdevelopment.

The desire for backcountry sheltered accommodation was expressed by a minority of skiers. To consider provision of such facilities would require additional public imput.

6. Using radio and television as a source of information on ski hazards, opportunities and ski conditions would be a definite asset. The availability of information prior to leaving for a destination is of prime concern with all skiers.

7. If managers are to provide experience opportunities (explicitly or implicitly) to skiers, knowing what experiences skiers seek would be efficacious. Such factual data could suggest something about the environmental and social conditions required. For example, if a skier's prime experiential desire was naturalism, provision of such an "experience" ski trail might include some of the following characteristics: 1) trails through natural areas, 2) primitive, 3) few skiers or potential contacts, and 4) abscence of man-made features. Managers could provide skiers with information (brochures, pamphlets) on experience opportunities that are being provided for, so as to assist users to compare areas and choose the experience opportunity they desire. Computerized information systems should also be considered. Information on the available experiences that management is providing opportunities for, in terms of trails and/or selected areas, can be efficiently presented through the use of computers. This would allow skiers to match their preferred experience opportunities with what is offered on site. Skiers would also have additional information to compare areas/trails and choose the experience opportunity they wish to have. In addition, experience opportunities that are in conflict

(e.g., solitude versus being with people) would not be provided for on the same trail. The onus is on management to offer a wide range of opportunities best suited to providing desired experiences in considering the needs of all skiers. Development of such an experiential management criteria should be the eventual application of resource, facility and regulatory management.

8. In determining the social-psychological carrying capacity of an area, emphasis should be on managing impact of use/density, not aggregate density directly. It is the management of the environmental and social conditions (e.g., specific experiences or high quality recreation opportunities to be provided by management) identified as minimally acceptable and appropriate that is important (Stankey 1984). When those conditions are reached and management strategies other than reducing use are inadequate, the associated use level would represent the area's capacity (Washburne 1982). Intensive management of conditions including frequent observation, however, would most likely maintain desirable conditions without the need for reducing use. Site management and indirect modification of user behavior would be the most preferred methods of "condition" management. Those likely to be most effected by crowding are individuals whose prime experiential desire was solitude.

Impetus for Further Research

The factors influencing the perception of crowding in this study was not exhaustive. Identifying other variables and understanding the relative importance of each factor in interaction with other factors requires further study. Results from such a study would provide managers with information as to users' perception of crowding and suggest or indicate what measures might be necessary to reduce impacts.

In comparing findings from the present study with other studies, it became apparent that a standardized format for obtaining socio-economic information would be beneficial. A set of criteria would effectively facilitate comparisons of data from different areas and over time.

A final area for further research involves the experiences desired by skiers. Multivariate cluster analysis may help managers to identify groups of skiers (i.e., skier types) seeking similar bundles of psychological outcomes or experiences rather than focusing on individuals. This information could assist managers to differentiate skier types on the basis of preferences for environmental characteristics and/or management practices. In addition, managers should assess the sensitivity to crowding associated with specific experiences. Experiential management requires the development of longitudinal studies rather than one-time surveys.

It is hoped that the findings and issues discussed in the paper will contribute to the information on skier profiles and assist management.

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APPENDIX A

INTERVIEW FORM

INTERVIEW FORM

An Analysis of Cross-country Skier Preferences, Satisfactions and Characteristics in Kananaskis Provincial Park

Survey Location: ______________________________

Subject Number: ________ Time: ________ A.M./P.M. Date: ________

Sex: ________ Male ________ Female

Skiers attire: ( ) Advanced ( ) Moderate ( ) Poor (Observation)

Hi, Good morning, afternoon: My name is ______________________. As part of a graduate study program, at the University of Alberta, I am collecting information on cross-country skiers regarding their preference and impressions of skiing in the Kananaskis. This information would be used in assisting the planning and managing of future winter use of the park.

If you would permit me to ask you a few questions, I would be pleased to incorporate your opinions and concerns into this study.

Your response will be held confidential and only the statistics derived will be used.

PART I: USER CHARACTERISTICS

1. How long are you staying here?

   ____________ Day use

   ____________ Overnight

2. How many people are in your group?

   1 2 3 4 5 6 7 8 9 10 ____________

3. What type of group are you with? (observe; ask if not apparent)

   ____________ alone

   ____________ two or more families

   ____________ friends

_____________ cross-country ski club

_____________ single family/no children

_____________ single family/children

_____________ others ________________________________

4. A) What type of skiing will you be doing today?

____

____

B) How much of your skiing time (in percentage) is spent within other types of skiing categories?

_____________ ( ) Nordic

_____________ ( ) Ski Touring

_____________ ( ) Telemarking

_____________ ( ) Racing ______________________

_____________ ( ) Ski Mountaineering

_____________ ( ) Downhill

5. During the winter, are there other activities, besides skiing which you will be doing here?

( ) YES ( ) NO

Explain: ____

____

____

6. Why have you chosen this area to ski in?

____

____

Part II: SATISFACTIONS; PSYCHOLOGICAL OUTCOMES

7. Approximately how many years have you been cross-country skiing? _________

8. What level of skier do you consider yourself to be?

( ) Beginner ( ) Intermediate ( ) Advanced

9. (A) Tell me three (3) things that you enjoy when you are cross-country skiing? Both in terms of the activity and what a quality skiing experience means to you.

a) ______________________________

b) ______________________________

c) ______________________________

Of those things listed, which do you enjoy the most? Moderately? Least?

____

____

(B) Could you tell me three (3) things that bother you when you are cross-country skiing?

a) ______________________________

b) ______________________________

c) ______________________________

Of those things listed, which bothers you the most? Moderately? Least?

____

10. What suggestions would you make a park management to improve your skiing experience?

____

____

____

____

11. (A) What are the things that other skiers do that annoys you?

(A) Out of these, which is the most annoying to you? Which annoys you moderately and the least?

(B) What are the things that other skiers do that you appreciate?

(B) Out of these, which do you appreciate the most? Which do you appreciate moderately and the least?

PART III: PREFERENCES: ENVIRONMENTAL CHARACTERISTICS

12. What characteristics of the terrain or trail design actually detract from your satisfaction while skiing?

13. Which is the most important? Moderately important? Least important?

14. What characteristics of the terrain or trail design add to your satisfaction while skiing?

Which is the most important? Moderately important? Least important?

15. (A) How much time do you like to spend skiing? ____________ hours

(B) What length of trails do you prefer? _______ miles ______kms

Comment: ______________________________________

16. From what sources do you obtain most of your information in selecting this area to cross-country ski?

Most important source? Moderately important? Least important?

Does the park provide skiers with adequate information to enjoy their skiing?

( ) YES ( ) NO

Explain: ______________________________________

17. What type of facilities and services do you feel are important to have in an area designated for cross-country skiing?

Most important? Moderately important? Least important?

18. (A) Would you be willing to pay a user fee for using groomed trails as opposed to non-groomed trails?

( ) YES ________________ Amount ( ) NO

Comments: ____

____

(B) Would you be willing to pay a user fee for the backcountry area?

( ) YES ________________ Amount ( ) NO

Comments: ____

____

19. It is the park policy that pets are allowed in the park. Should this be continued or changed?

( ) YES ( ) NO

Comments: ____

____

20. Would you be interested in guided cross-country ski trips with an interpreter, park naturalist, or backcountry guide?

( ) YES ( ) NO

Comments: ____

____

PART IV: SOCIAL DENSITY

21. (A) Could you estimate the total number of persons, in groups other than your own, that you have encountered during your skiing trip? ____________

(B) What affect did this have on your skiing experience?

( ) Positive ( ) Negative ( ) Indifference

Comments: ____

____

(C) Did you expect to encounter as many people as you did?

( ) YES ( ) NO

22. How many other skiers would you have to encounter along the trails, during the day, before you begin to feel your skiing experience diminishes?

1 2 3 4 5 6 7 8 9 10 More __________

Explain: ____

____

23. Would you support measures to control the number of skiers using the area?

( ) YES ( ) NO

(B) If so, how would you prefer that this be accomplished?

____

____

(C) If not, would you elaborate on you feelings about control measures?

____

PART V: DEMOGRAPHIC TRAITS

24. Where is your place of residence?

____

25. What is the year you were born? ____________________

26. Could you describe the type of work you do? (occupation)

____

27. What is the highest level of education you have completed?

1 2 3 4 5 6 7 8 9 10 11 12 13 (Primary)
1 2 3 4 B.Sc./B.A. M.Sc./M.A. PhD.

Other: ____

PART VI: MISCELLANEOUS

Thank you for answering this survey. Your cooperation was greatly appreciated. Do you have any other opinions about skiing that you would care to mention?

APPENDIX B

INTERVIEW PROCEDURE GUIDE

INTERVIEW PROCEDURE GUIDE

1) Materials Required

i) Interview Materials

Questionnaires, clipboard, pencils, trail maps, paper for notes, books on cross-country skiing.

ii) Cross-Country Skiing Equipment

Skies, poles, boots, waxes, etc. Appropriate clothing (also fingerless gloves so one can write in cold weather).

iii) Food for duration of day

2) Interview Procedure

i) Approach prospective respondent in a non-threatening fashion so as to establish a comfortable atmosphere. Timing is crucial when deciding when or where to approach each skier. An attempt should be made to contact skiers when they seem most receptive such as in the following situations: waxing skies, having lunch or resting. The interviewer should remain cheerful and confident when conducting an interview.

ii) The following steps should be carried out when questioning skier:

a) Friendly, polite opening statement; "Hello, (hi, etc.). My name is Roy Finzel. As part of a graduate study program, at the University of Alberta, I am collecting information on cross-country skiers regarding their preference and impressions of skiing in the Kananaskis. This information would be used in assisting the planning and managing of future winter use of the park.

If you would permit me to ask you a few questions, I would be pleased to incorporate your opinions and concerns into this study.

Your response will be held confidential and only the statistics derived will be used."

b) Enquire if they have skied in the area before.

c) Inform the skier that the interview duration is approximately 10 minutes.

d) If the skier accepts, begin with interview once the researcher has assured himself that the respondent is at ease and comfortable.

e) If the skier declines, follow with one of the following alternatives: Depending on the skier's response, continue conversation in such a manner as to determine if the individual would be willing to cooperate in the future. The attitude of the respondent is usually discernable and the interviewer's discretion and judgement should serve as a guide for further inquiry. If the skier shows no interest, has no time, is going home, etc., thank him/her and continue the survey.

3) Conclusion

i) Any dialogue with the respondent, apart from the actual questioning, should avoid personal opinions which may incense the individual. One should present a positive image at all times.

ii) Thank the respondent for their cooperation. Make the results available to them, if so desired.

iii) At the end of each day, review the completed interview forms to ensure all the information collected is complete. Summarize the events of that day (weather, how interviewing went, etc).

APPENDIX C

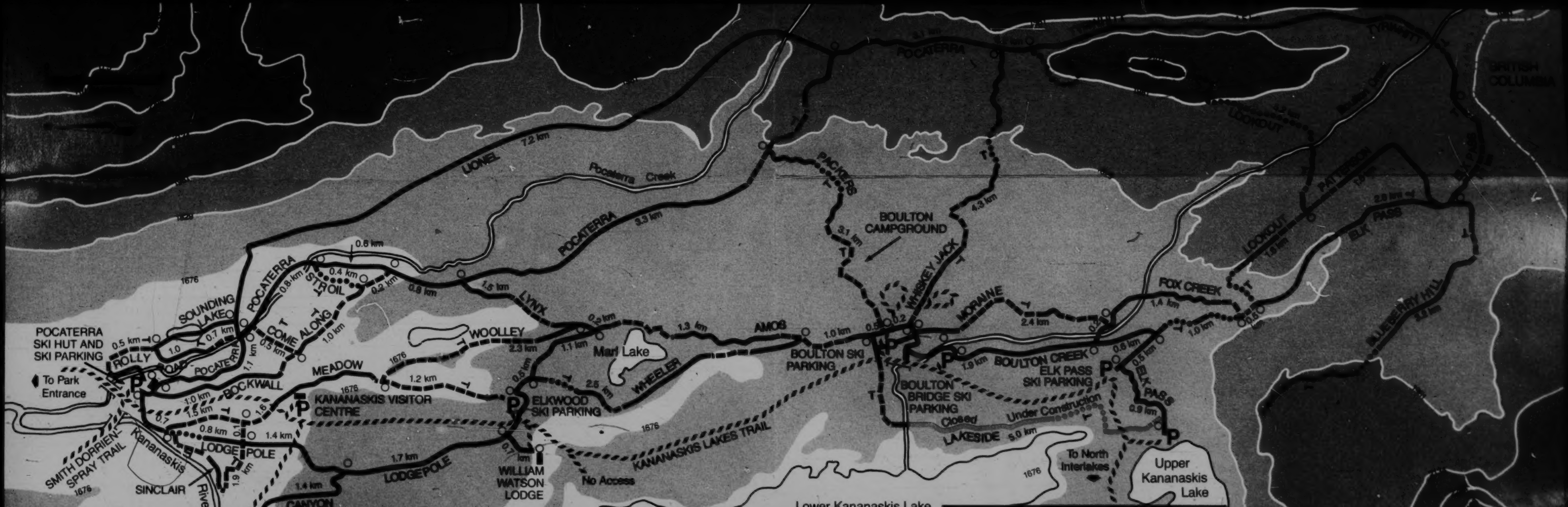
TRAIL MAP

(In Pocket)

VITA

Roy Eric Finzel was born December 27, 1954 in Edmonton, Alberta. He graduated from Central Memorial High School in 1974 and enrolled at the University of Calgary. He obtained a Bachelor of Science Degree in Physical Geography in June 1979. He also earned a minor in German. During the summers of 1980-84 he worked as a Seasonal Grounds Keeper for the Calgary Board of Education. In September 1980, Finzel enrolled as a special student in Forestry at the University of Alberta. Upon completion of one year of course work, he was accepted in the Master of Science Program in Wildland Recreation at the University of Alberta. During his Graduate Program, Finzel was both a Teaching and Research Assistant.

Finzel intends to pursue a career in the Recreation/Resource field.


LIONEL 7.2 km
Pocaterra Creek
POCATERRA 3.3 km
POCATERRA
TYRWHITT
LOOKOUT
PATTERSON
ELK PASS
BLUEBERRY HILL
BRITISH COLUMBIA
PACKERS
3.1 km
BOULTON CAMPGROUND
WHISKEY JACK
4.3 km
MORAINE
2.4 km
FOX CREEK
1.4 km
1.0 km
0.6 km
0.4 km
0.2 km
0.8 km
STROIL
1.5 km
LYNX
SOUNDING LAKE
0.7 km
POCATERRA SKI HUT AND SKI PARKING
0.5 km
1.0
ROLLY ROAD
COME ALONG
1.0 km
POCATERRA
1676
WOOLLEY
2.3 km
1.1 km
Marl Lake
WHEELER
2.5 km
1.3 km
AMOS
1.0 km
BOULTON SKI PARKING
0.5
BOULTON CREEK
1.9 km
ELK PASS SKI PARKING
0.6 km
0.5 km
ELK PASS
0.9 km
To Park Entrance
ROCKWALL
MEADOW
1.2 km
KANANASKIS VISITOR CENTRE
ELKWOOD SKI PARKING
BOULTON BRIDGE SKI PARKING
Closed
Under Construction
LAKESIDE 5.0 km
KANANASKIS LAKES TRAIL
SMITH DORRIEN-SPRAY TRAIL
Kananaskis River
LODGEPOLE
1.4 km
0.8 km
1.7 km
LODGEPOLE
SINCLAIR
1.9 km
0.7 km
WILLIAM WATSON LODGE
No Access
To North Interlakes
Upper Kananaskis Lake
Lower Kananaskis Lake
CANYON
DAM
CANYON SKI PARKING

LEGEND

- P Ski parking
- ▬ ▬ ▬ Roads
- ▬ Visitor Center
- ≈ Streams
- ○ Lakes
- Bridge
- Contour line–152.5 m (500') intervals
- ○—○ 0.1 km Distance between trail junctions
- ⊣ Uphill side
- ⊢ Downhill side

TOTAL ONE WAY DISTANCE

●	2.4 km	Amos	■	2.4 km	Moraine
◆	3.2 km	Blueberry Hill	■	3.1 km	Packers
●	2.5 km	Boulton Creek	■	1.6 km	Patterson
■	1.4 km	Canyon	●	10.0 km	Pocaterra
■	1.5 km	Come Along	■	1.0 km	Rockwall
■	7.0 km	Elk Pass	■	1.5 km	Rolly Road
■	1.6 km	Fox Creek	■	2.0 km	Sinclair
◆	3.0 km	Lakeside	●	0.7 km	Sounding Lake
●	7.2 km	Lionel	◆	0.6 km	Stroil
●	4.7 km	Lodgepole	■	4.5 km	Tyrwhitt
◆	6.8 km	Lookout	■	4.7 km	Wheeler
■	1.7 km	Lynx	■	4.5 km	Whiskey Jack
■	4.3 km	Meadow	■	2.3 km	Woolley

TRAIL DIFFICULTY

Trail Signs

- ● Easy
- ■ Intermediate
- ◆ Difficult

Map

- ▬▬ Easy
- ▬ ▬ Intermediate
- ●●●● Difficult

PACKERS
WHISKEY JACK
WHEELER
COMFORT STATION
MORAINE
Boulton Creek
P
P
P
LAKESIDE
CONCESSION
BOULTON CREEK

Bow Valley Provincial Park
To Banff
Trans-Canada Highway
To Calgary
To Trans-Canada Highway
To Trans-Canada Highway
22
BRAGG CREEK
GOLF COURSE
KANANASKIS PROVINCIAL PARK
To Turner Valley
SANDY McNABB
To Longview
? Travel Information Centre
Lethbridge
0 10 20
KILOMETRES